Bicycle Master Plan

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City of Hayward
Department of Public Works
Engineering and Transportation Division

Bicycle Master Plan

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1

INTRODUCTION

1.1 Overview

Around the nation, over the past years, the use of bicycles for recreation, sport, fitness and transportation has increased. Bicycling plays a greater role in transportation in some cities than ever before. Bicycling is one of the most popular recreational activities in the country (second only to swimming) and a significant form of transportation as well. The Bicycle Federation, a national bicycling promotion organization, estimates that there are 75 million bicyclists in the United States.

Increased bicycling can help to alleviate some of the major urban environmental problems in California and more specifically in the San Francisco Bay Area. Bicycle use helps reduce noise, produces no air pollution, can significantly reduce the consumption of fuel, and does not damage the roadway. Further, bicycle use can help increase the efficiency of the existing transportation system.

The potential for bicycle use in transportation is illustrated by the fact that nationally, according to the Federal Highway Administration, almost two thirds of all automobile trips (62.7%), are less than 5 miles [8km] long--about 25 minutes or less by bicycle[1]. In Hayward, 33 percent of all trips are 5 miles [8km] or less. Conversion of even a small percentage of these trips from autos to bicycles would result in a significant improvement in urban conditions.

Unfortunately, the increase in bicycling is not totally problem free. In Hayward the number of bicycle accidents is relatively small and has remained stable throughout recent years. If bicycle ridership in Hayward increases, the number of bicycle accidents could be expected to increase too, unless proper facilities and programs are implemented.

1.2 Local, State and Federal Initiatives

Bicycling is an important mode of trans-

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[1] Federal Highway Administration. *The National Bicycling and Walking Study, Final Report.* Washington, DC: US Department of Transportation, 1994.

portation, used separately or with other modes of transportation. The passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 placed increased importance on the use of the bicycle from a transportation standpoint.

The 1991 ISTEA, provides funding authorization for about $155 billion in federal assistance to transportation projects in fiscal years 1992-1997. It explicitly recognizes the transportation value of bicycling and mechanisms to increase consideration of bicyclists needs. The bill requires that 10 percent of the Surface Transportation Program (STP) funds allocated to each state be used for Transportation Enhancement Activities (TEA), a set of ten activities intended to enhance the environmental, scenic, or cultural quality of an area affected by a transportation facility. Bicycle facilities are included among these transportation enhancements.

Even before ISTEA, the City of Hayward adopted a Bicycle Facilities Plan in 1979 which designated future bike paths (Class I), lanes (Class II), and routes (Class III). The lack of funding has made it difficult to complete many of the proposals in the 1979 plan.

Despite this circumstance, consideration of the needs of bicyclists has always been a concern of the elected officials and citizens of the City of Hayward. To this regard the current Hayward General Policies Plan states that:

> "Alternatives to automobile transportation will be encouraged through development policies and provision of transit, *bike* and pedestrian amenities."

This Bicycle Facilities Master Plan defines a bicycle circulation system for Hayward and will be directed toward the fulfillment of the Alternative Transportation Section of the current Circulation Element of the City of Hayward General Policies Plan:

> "Greater use of bicycles would have many benefits. Bicycles are a quiet, non-polluting form of transportation which does not directly consume fossil fuels or require vast amounts of land and expensive infrastructure."

> "Review and update the Bicycle Facilities plan as appropriate; seek to improve bike and pedestrian access and availability of bike racks at transit stations, shopping centers, and employment centers."

Likewise, this bicycle plan is in response to one of the strategies of the Transportation Section of the Growth Management Element:

> "Update and implement a comprehensive bicycle facilities plan with a system of bike paths throughout the city, tying residential areas to commercial areas and to recreational open space along the shoreline and the hills."

Furthermore, the bicycle plan will respond directly to the recommendations of the neighborhood plans:

> "The Task Force recommends revision of the Bicycle Facilities to provide safer, more attractive routes." (Mt. Eden Neighborhood Plan, July 17, 1990.)

> "... recognize the benefits of cycling and

> encourage the use of bicycles as a means of transportation and recreation in the community." (Jackson Triangle Neighborhood Plan, January 15, 1991.)
>
> "Task force members are recommending that bicycle routes be established to guide riders and that lanes be provided where necessary to clearly delineate a 'safety zone' for bicyclists." (Upper "B" Street Neighborhood Plan, September 15, 1992.)
>
> "The total lack of bike lanes in the neighborhood was noted by residents and implementation of the Bicycle Facilities Plan suggested." (North Hayward Neighborhood Plan, July 19, 1994.)

In 1994, the Metropolitan Transportation Commission (MTC) approved an allocation of Transportation Development Act (TDA) funds to the City of Hayward in the amount of $45,000 to develop a bicycle plan. This Plan is being developed to meet the requirements of the 1994 California Bicycle Transportation Act, which are contained in Chapter 8, Article 3 of the California Streets and Highways Code. The act requires that the needs of bicyclists be addressed in future local, regional and state transportation plans and programs. The specific language appears as follows:

> §§ Section 890. It is the intent of the Legislature, in enacting this article, to establish a bicycle transportation system. It is the further intent of the Legislature that this transportation system shall be designed and developed to achieve the functional commuting needs of the employee, student, business person, and shopper as the foremost consideration in route selection, to have the physical safety of the bicyclist and the bicyclist's property as a major planning component, and to have the capacity to accommodate bicyclists of all ages and skills.
>
> §§ Section 891. All city, county, regional, and other local agencies responsible for the development or operation of bikeways or roadways where bicycle travel is permitted shall utilize all minimum safety design criteria and uniform specifications and symbols for signs, markers, and traffic control devices established pursuant to Sections 890.6 and 890.8.

Beginning with fiscal year 1992-93 MTC made cities' receipt of TDA, Article 3 funds for bicycle improvements[1], Bicycle Lane Account funds[2], and Proposition 116 (the Rail Transportation Bond Initiative) funds[3], contingent upon their having adopted a comprehensive bicycle master plan.

Without an adopted and State approved bicycle plan, Hayward would be automatically disqualified from applying for State funds. This requirement is one of several reasons the City of Hayward is undertaking updat-

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[1] The TDA created a Local Transportation Fund for each county funded by one-quarter of a cent of the 7% State sales tax. Article 3 of the TDA permits local agencies to spend a portion of that money on bicycle programs and improvements.

[2] The Bicycle Lane Account, created by the State legislature in 1972, annually allocates $360,000 of the State gasoline tax for the construction of new bicycle facilities.

[3] In 1990 the voters of California passed Proposition 116, which authorized the sale of $2 billion in bonds. Of the money generated by the bond issue, $20 million (1%) was set aside specifically for the construction of new bicycle facilities.

ing of its bicycle master plan.

This document represents a comprehensive approach to bicycling and is intended to serve as an aid in improving the bicycling environment in the City of Hayward. Besides Federal, State and Local mandates many other factors motivated this study. They include concerns over air pollution, traffic, and an increase in bicycle commuters. This plan sets forth goals, objectives and programs that can make bicycle transportation a viable option to Hayward residents through safe, convenient and appropriate facilities to encourage bicycle riding.

If the full potential of bicycle transportation in Hayward is to be realized, a sustained commitment is called for, reflected in the willingness to allocate resources when and where needed. This will assure that bicycling becomes a truly viable mode of transportation.

1.3 The 1979 Bicycle Facilities Plan

In 1976 a Bicycle Subcommittee of the Public Services Commission was established for the purpose of developing a plan for bicycle facilities.

As a result of the Bicycle Subcommittee, in 1979 the City adopted a Bicycle Facilities Plan which among several suggestions, designated future bike paths (Class I), bike lanes (Class II), bike routes (Class III) and sidewalk routes. (See Figure 1 for the 1979 Proposed Bicycle Network Plan and Figure 2 for the various bikeway classifications which are still in use.)

Some of the recommendations of the 1979 plan were:

The need for the City to recognize the benefits of cycling and encourage the use of bicycles as a means of transportation and recreation in the community.

The need for Hayward to develop bicycle facilities that would improve bicycle safety and enhance the cycling environment within the City .

The 1979 facilities plan proposed a bikeway system that was to be implemented in three phases:

Phase I:
A demonstration project comprised of bike lanes (Class II) on Santa Clara Street, Harder Road, Tennyson Road, Calaroga Avenue and the Gading-Patrick Corridor. Of those projects, all were implemented except for the one on the Gading-Patrick Corridor. In subsequent years, a "signed only" bike route (Class III) was installed on Patrick Avenue with no work on Gading. All of these demonstration bicycle facilities projects were to be evaluated within one year of their implementation, but there is no record of such review.

Phase II:
"Construction projects" were bicycle facilities to be implemented as part of street construction or reconstruction projects at the following locations:

Bikeways associated with A Street Project: bike lane (Class II) on A Street, bike route (Class III) on Hathaway Avenue, bike route (Class III) on Laurel Avenue, bike route (Class III) on Western Boulevard, bike route (Class III) on Fourth Street and bike route (Class III)

CITY OF HAYWARD
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BICYCLE MASTER PLAN

1979
BICYCLE NETWORK PLAN

PROPOSED

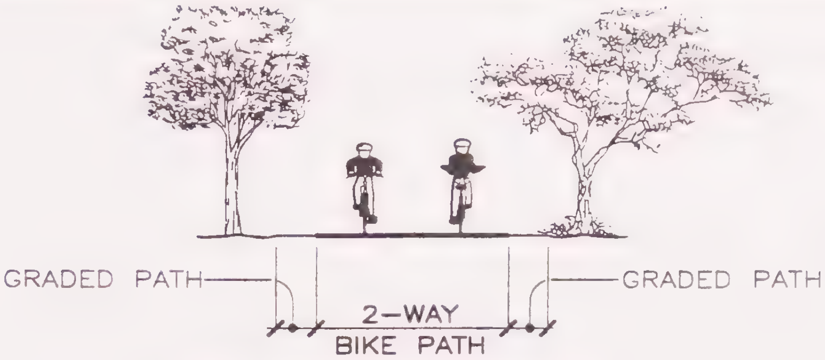
BIKE PATH (CLASS I)

BIKE LANE (CLASS II)

BIKE ROUTE (CLASS III)

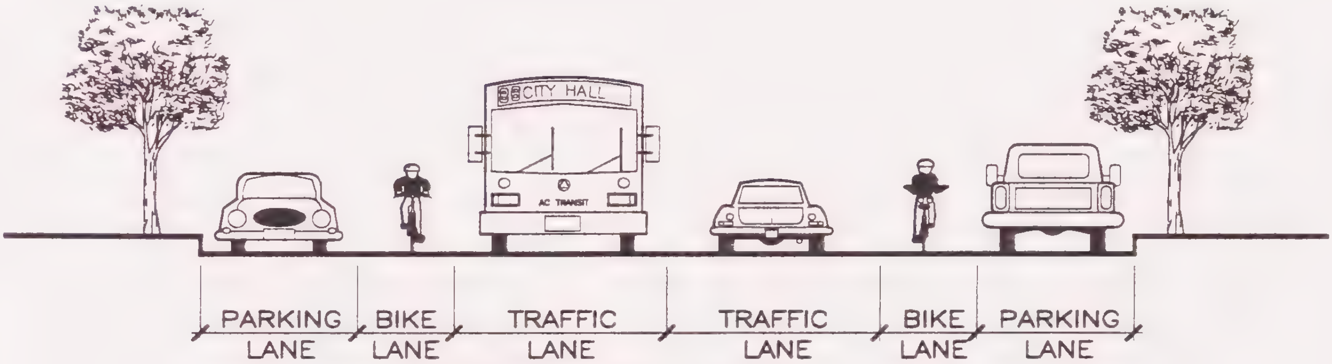
SIDEWALK ROUTE

FIGURE 1



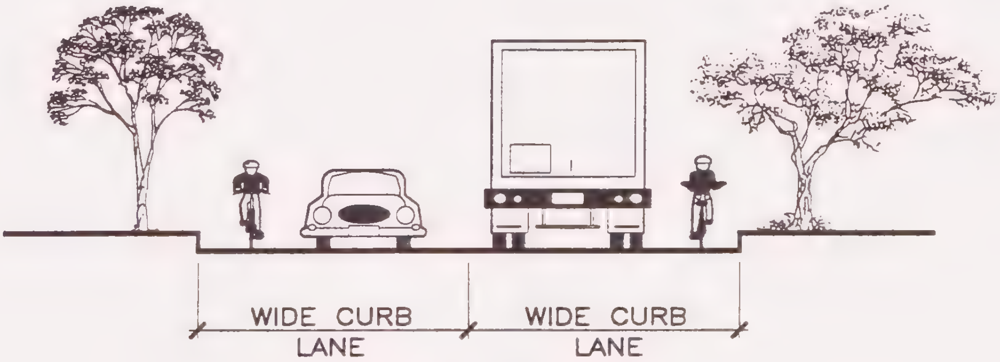
BIKE PATH (CLASS I)

- EXCLUSIVE RIGHT-OF-WAY FOR BICYCLISTS
- MINIMAL CROSS-FLOW BY MOTOR VEHICLES (e.g. AT INTERSECTIONS)



BIKE LANE (CLASS II)

- RESTRICTED RIGHT-OF-WAY DESIGNATED FOR THE EXCLUSIVE FLOW OF BICYCLES
- TRAVEL BY MOTOR VEHICLES OR PEDESTRIANS PROHIBITED, BUT VEHICLE CROSS-FLOW ALLOWED FOR PARKING AND TURNING
- MARKED AND SIGNED AS A BIKE LANE



BIKE ROUTE (CLASS III)

- SHARED RIGHT-OF-WAY FOR MOTOR VEHICLES AND BICYCLES
- SIGNED AS A BIKE ROUTE

BIKEWAY CLASSIFICATIONS

FIGURE 2

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION
BICYCLE MASTER PLAN

on D Street, east of Fourth Street. Only the bike lane (Class II) on A Street has been implemented.

Bicycle facilities associated with the Whitman Street Project: bike route (Class III) on Whitman Street, Sycamore Avenue, Silva Avenue and Meek Avenue. The Whitman Street Project did not go beyond the planning phase, therefore the bicycle facilities have not been installed.

Bikeways associated with the D Street Extension Project: bike route (Class III) on D Street from Fourth Street to Grand Street and bike lane (Class II) on D Street from Grand Street to Winton Avenue. Only the latter bicycle facility was implemented in the late 1980's with the widening of D Street from Winton to Grand.

The D Street Phase II Widening Project is scheduled for construction in 1997, which will extend the bike lane (Class II), from Grand Street to Second Street. The widening of D Street, from Second Street to Fourth Street is contingent upon the construction of the D Street ramps associated with the late stages of the Route 238 Freeway.

Bikeways associated with Route 238: The 1979 bicycle plan showed these as routes by other agencies and did not specify the type of bikeway to be provided for this project. The planned bicycle facilities were on the Route 238 Freeway, from D Street to Industrial Parkway, on Carlos Bee Boulevard, from Route 238 to California State University and on Harder Road, from the University to Route 238.

The Route 238 project has appeared as a freeway in State plans since 1961. In the Hayward Area, north/south along Mission Boulevard, approximately 400 parcels of land for Route 238 were acquired. Legal actions by different groups and delays in funding have kept the project on hold, subsequently affecting further implementation of any bicycle facility related to that corridor.

Phase III:
The remaining portion of the bikeway system was to be done after the other two phases were completed.

The 1979 plan also recommended that bikeways should be considered in the design of all new street construction projects.

Additionally, the plan stated that the City should provide and/or encourage supporting facilities or programs. Among them were the following:

- Development of bicycle facilities with adjacent jurisdictions. This recommendation has not been implemented effectively especially since adjacent jurisdictions also were in need of an updated plan.
- Provision of bicycle storage facilities at principal bicycling destinations. Bicycle storage facilities have been implemented only at the BART station and Clawiter City Hall and bicycle racks at the City Library and in the downtown.
- Maintenance of bikeways at a level necessary to ensure an acceptable riding

surface. No permanent program has been implemented to monitor the condition of the bikeways.

- Bicycle safety educational programs, especially for young people. The only program of this type is the series of bicycle rodeos led by Kaiser Hospital with the participation of the Hayward Police Department.

- Enforcement of the State of California Vehicle Code Regulations regarding bicycles, pertaining to bicyclists and motor vehicle operators. Per the State of California Vehicle Code, bicycles are subject to the same laws and regulations that apply to motorized vehicles. Violations of traffic laws by bicyclists are a common event and should be prosecuted with the same persistence as with motorized vehicles.

The National Bicycling and Walking Study, FHWA Case Study No. 18, identifies three factors that make up a successful bicycle program:

- A full-time program manager.

- Supportive elected officials and professionals in Government agencies.

- An active and organized citizenry, usually exemplified by the presence of a Citizens Advisory Committee.

But, even with the existence of those three elements, the same study agrees there is no guarantee for success.

Additionally, the study mentions that Palo Alto, for example, has not had an official bicycle program manager, but has done more than most communities to improve conditions for bicyclists. Palo Alto does have good citizen involvement and a responsive government. At the same time the study indicates that other cities do not have Bicycle Advisory Committees but have a program manager and supportive elected officials.

1.4 Local Government and Citizen Involvement

A technical review committee made up of City and Alameda County staff as well as a representative from the East Bay Bicycle Advisory Committee, initially helped develop the concepts for this Master Plan. In addition review comments were sought from all abutting jurisdictions.

Based in the 1979 Bicycle Facilities Plan and local policies that included the Neighborhood Plans (for more about the Neighborhood Planning Program see Section 4.5), information was developed and presented to the cycling community and the public at large in two public workshops. The purpose of these workshops was to review the goals and objectives identified for this Bicycle Master Plan, review existing bicycle facilities, identify areas in which new bicycle facilities should be developed, and review and recommend changes or procedures to improve the proposed bikeway system. Interested bicycle organizations and individuals from the community provided comments.

Finally the plan will have undergone public input at both a Planning Commission and City Council meeting prior to adoption.

2

GOALS AND OBJECTIVES

Planning for bicycle transportation should be integrated into the overall transportation planning process and as such, the following goals and objectives will guide the development of the Bicycle Master Plan and assure conformity with the General Plan policies discussed in Chapter 1.

NEW FACILITIES:

Goal 1: To provide the opportunity for safe, convenient and pleasant bicycle travel throughout all areas of Hayward,

- **Objective 1.1: To make the system of streets accommodate bicycle use**
- **Objective 1.2: To assist in the development of new facilities, require new development to either contribute funding, or to assist in the construction of nearby planned bicycle facilities.**
- **Objective 1.3: Seek funding of bicycle facilities through available sources such as the Federal Intermodal Surface Transportation Enhancement Act funds; State of California Transportation Development Act funds; the Bicycle Lane Account funds; the Regional BAAQMD funds and Proposition 116 (Rail Transportation Bond Initiative) funds.**

BICYCLE COMMUTING AND RECREATIONAL OPPORTUNITIES:

- **Goal 2: To provide the related facilities and services necessary to allow bicycle travel to assume a significant role as a local alternative mode of transportation and recreation, and**
- **Objective 2.1: To work with transit agencies - such as BART and AC Transit - to increase their system's accessibility to bicycle users, especially during peak hour commute times and on lines serving major bicycle destinations such as California State University at Hayward.**

- **Objective 2.2: To provide bicycle lockers at primary City facilities to increase bicycle commuter ridership among City employees.**

- **Objective 2.3: To consider additional Travel Demand Reduction programs that provide economic incentives for bicycle commuters.**

- **Objective 2.4: To increase bicycle use, as alternative transportation (the current bicycle mode split for the City of Hayward is 0.7 percent)[1], and**

- **Goal 3: To encourage the use of bicycles as a pleasant means of travel and recreation embodying physical, environmental and social benefits.**

- **Objective 3.1: To reduce the number of bicyclist injuries (enhance bicyclists' safety) to create opportunities for new bicyclists to have a positive bicycling experience.**

- **Objective 3.2: To promote public awareness and acceptance of bicycling.**

The initial focus of the overall bicycle master plan should be on improving riding conditions for current cyclists.

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[1] The National Walking and Bicycling Study by the 1991 U.S, Department of Transportation Appropriations Act, established the goal of doubling the current percentage of bicycling trips and to reduce by 10 percent the number of bicyclist injuries and deaths, by the year 2000. The current rate for the City was taken from the U.S. Census "Journey to work" and compiled by the Metropolitan Transportation Commission in 1994.

3

CURRENT CONDITIONS

The planning for bicycle facilities begins with inventorying existing physical conditions of roadways and other bicycle facilities. Existing conditions affecting bicycle travel are discussed in this section.

3.1 The Physical Setting:

The City of Hayward is 43 squares miles [111 square kilometers]. Three distinctive physiographic areas are found within its boundaries. These areas can be divided into three broad categories of topography (Bayland, Bay Plain and Hill Area.) Each area has different characteristics to be considered when planning for bicycling.

The Baylands stretch along the 8 miles [13 km] of Hayward Shoreline. This area, as does the rest of the Bay's mudflats and vegetated areas, provides food, shelter and nesting habitat for birds and small animals. Enhancing opportunities for public access to the bayshore is a State priority. With the increase of public access the value of enhancing the recreational experience by creating a network of accessways has become important. The Association of Bay Area Governments (ABAG) developed the Bay Trail in cooperation with local and regional agencies. The Bay Trail offers Hayward residents improved access to the Bay and to the region's natural and recreational resources. The former City dump at the end of Winton Avenue will be planted and made an attractive open space adjacent to the Bay Trail. The Shoreline can be considered an ideal environment for bicycling.

The Bay Plain is also known as the "flatlands." This contains most of the urbanized areas of Hayward. Its relative flat topography provides a good setting for bicycling. Most of the City's bicycle facilities occur within existing road right-of-way.

The Hill Area is folded into several narrow ridges which slope westward to the Bay Plain. Steep grades and narrow access roads are constraints for bicycling. The hilly terrain will generate less bicycle traffic than flatter areas.

Hayward is part of the greater Bay Area

Mediterranean climatic zone (cool summer.) In general the City of Hayward has a fairly mild environment for bicycling. A person can commute by bicycle more than half of the year. The number of people bicycling to work is about the same as the national average (0.7 %).

3.2 Population:

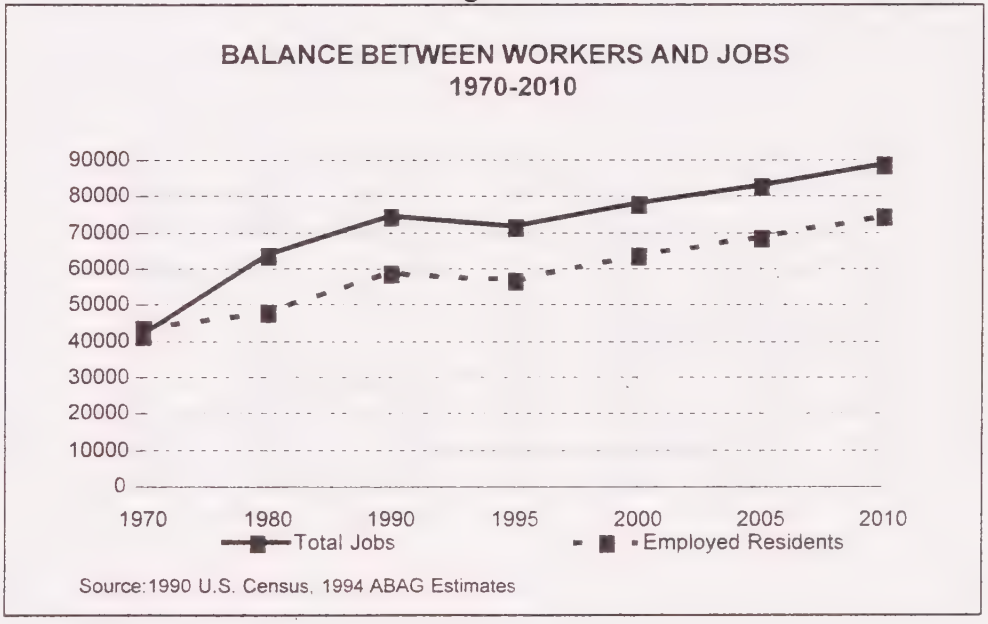
In 1990, the U.S. Census indicated that the population in the City of Hayward was 118,856. Hayward's population is projected to grow by 3.5 percent by the year 2000 (from 128,800 in 1995 to 133,300 in 2000). An increase in population means a potential increase in bicycling.

3.3 Land Use and Bicycling:

Land use regulation and development proposals can be either a disincentive to bicycle use or serve to enhance the use of bicycles as a viable mode choice.

The overall development pattern in the Hayward Area has resulted in a good balance between the number of people who reside in the City and the number of jobs in the same area. The balance between residential development and commercial-industrial development is important in reducing traffic through closer proximity of workers to their jobs. Providing for bicycle access can help promote its usage in this environment.

Figure 3



Source:1990 U.S. Census, 1994 ABAG Estimates

Figure 3 shows that by 1970 the City of Hayward was more of a bedroom community with more residents working than jobs. By 1980 the number of jobs (64,283), had already surpassed the number of employed residents (47,960). Hayward has become an economic center that employs more workers than its work force. This trend, which is projected to continue, will provide the opportunity for more Hayward residents to find work within the City, creating potential for more bicycle riders.

3.4 Circulation System:

The flatlands contain three railroad lines the Nimitz (I-880) freeway and State Route 92, forcing local traffic, including pedestrians and bicyclists, onto the few streets that cross those barriers. Most of the employment centers are located west of the I-880 freeway and most residential areas are located east of the freeway. Safe bicycling is restricted by complex intersections such as at Jackson Street-Foothill Boulevard and Mission Boulevard, and Winton Avenue-Southland Drive at the I-880 south bound ramp exit.

The City has a five year Capital Improvement Program (CIP) which includes improvements to the Hayward street network. In the vicinity of Downtown, the widening of "D" street from Grand Street to Second Street and, near the Municipal Airport, the widening of "A" Street from Hesperian Boulevard to the I-880 freeway are under construction. Both improvement projects include bicycle lanes (Class II).

In the Industrial Area, extension of "A" Street along the Skywest Golf Course Road to the proposed Cabot extension is being contemplated. Provision of bicycle facilities on these new roadways should be a priority.

3.5 USER CHARACTERISTICS:

Bicyclists differ widely in their abilities and preferences for riding in various environments.

Any roadway treatment intended to accommodate bicycles must address the needs of both experienced and less experienced riders. There is a wide range of abilities and skills among bicyclists. The California Department of Transportation Bikeway Planning and Design Guidelines state that bicycle facilities should provide efficient travel and safe ridership for the user. These guidelines contain standards that are targeted for any bicyclist regardless of his or her competence to ride on the streets.

In a 1994 publication funded by the Federal Highway Administration (FHWA) the concept of a "design cyclist" was developed[1]. This publication proposed a classification system for bicycle users, that can also be applied to bicycle users in most cities . The bicyclists classification is as follows:

3.5.1 Group A - Advanced Bicyclists

Experienced riders, who can operate under most traffic conditions, ride longer distances at higher speeds and tend to use the same roadways that the cars use, comprise the majority of the current users of collector and arterial streets and are best served by the following:

- Direct access to destinations usually via the existing street and highway system.
- The opportunity to operate at maximum speed with minimum delays.
- Sufficient operating space on the roadway or shoulder to reduce the need for either the bicyclist or the motor vehicle operator to change position when passing.

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[1] William Wilkinson II, et al. January 1994. *"Selecting Roadway Design Treatments to Accommodate Bicycles"* Center for Applied Research, Inc. and Bicycle Federation of America, FHWA Contract No. DTFH61-89-C-00089, Publication No. FHWA-RD-92-073.

This group of experienced riders considers the bicycle as the primary transportation mode for most trips.

3.5.2 Group B - Basic Bicyclists

Casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced Group A level, but there will always be many millions of basic bicyclists. For the most part they don't ride for transportation or if they do, they don't ride long distances. This group of average cyclists prefer:

- Comfortable access to destinations, preferably by a direct route (these cyclists are willing to accept some out of direction travel to avoid hazardous locations), either low speed, low traffic volume streets or designated bicycle facilities.

- Well-defined separation of bicycles and motor vehicles on arterial and collector streets (bike lanes or shoulders), or on separate bike paths.

3.5.3 Group C - Children

Usually pre-teen riders whose roadway use is often initially monitored by parents. Eventually they are allowed independent access to the roadway system. They and their parents prefer the following:

- Access to key destinations surrounding residential areas including schools, recreation facilities, shopping or other residential areas.

- Shortest route almost exclusively.

- Residential streets with low motor vehicle speed limits and volumes.

- Well-defined separation of bicycle and motor vehicles on arterial and collector streets, or on separate bike paths.

The FHWA study combines Groups B and C thereby recognizing two broad classes of bicyclists: Group A riders and Group B/C riders. In lieu of a California "design cyclist" these two groupings are proposed to be used to define bicycle facilities in Hayward.

3.6 Accidents Statistics:

The number and type of accidents are needed to measure route safety. The accident data was collected from the California State-Wide Integrated Traffic Records System (SWITRS) for the period of January 1990 through June 1995. The SWITRS database includes statistics such as: California Vehicle Code (CVC) violations, party at fault, daylight or darkness, collision type and more details about the victim: type (driver, passenger, bicyclist, pedestrian), age, sex, and extent of injuries. The SWITRS database lists a total of 372 bicycle accidents between January 1990 and June 1995 in Hayward. The number of bicycle accidents per year during this period remained relatively constant. The lowest number of accidents, 56, occurred in 1993, and the highest, 74, in 1990. During this period no bicycle fatalities were reported.

It is important to note that these accident figures reflect reported accidents only and therefore undercount total accidents and

non-automobile-related accidents. A national study on bicycle safety found that only a fraction of all bicycle-related accidents are ever reported to the police. For example, a study of bicycle injury cases treated in emergency rooms conclude that only 10 percent of accidents serious enough to require emergency room treatment were actually reported to the police. Sixty percent of the bicycle accidents in which a motor vehicle was involved and virtually none of those cases not involving a motor vehicle were reported to the police. A significant proportion of the bicycle accidents that are never reported to the police involve no other vehicle.

The most common bicycle accident is a bicycle-bicycle or a bicycle-pedestrian accident. The bicyclist simply loses control and falls or hits a pedestrian, dog, or fixed object. Many of these accidents have little to do with the type of bike facility.

A map of the sites of accidents has been prepared and will help to show where the high accident areas and intersections are located (Figure 4). The accident data is summarized on Tables 1 and 2.

TABLE 1

JANUARY 1990 THROUGH JUNE 1995

FREQUENCY OF BICYCLE ACCIDENTS BY RIDER AGE AND SEX

AGE	MALE	%	FEMALE	%	TOTAL	%
0-4	0	0.0%	0	0.0%	0	0.0%
5-9	37	10.6%	5	1.4%	42	12.0%
10-14	64	18.3%	13	3.7%	77	22.1%
15-19	37	10.6%	7	2.0%	44	12.6%
20-24	43	12.3%	2	0.6%	45	12.9%
25-29	33	9.5%	6	1.7%	39	11.2%
30-39	49	14.0%	13	3.7%	62	17.8%
40+	35	10.0%	5	1.4%	40	11.5%
TOTAL	298(*)	85.4%	51	14.6%	349	100.0%

(*) In 74 cases the gender of the bicyclist was not obtained

DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION

BICYCLE MASTER PLAN

BICYCLE ACCIDENTS

JANUARY 1990–JUNE 1995

○ ACCIDENT LOCATION

FIGURE 4

TABLE 2

BICYCLE ACCIDENTS BY DAY OF WEEK

	TOTAL		1995	1994	1993	1992	1991	1990
SUNDAY	32	8.6%	2	8	5	4	5	8
MONDAY	52	14.0%	4	12	10	8	8	10
TUESDAY	63	16.9%	3	18	8	11	12	11
WEDNESDAY	65	17.5%	6	12	9	10	13	15
THURSDAY	51	13.7%	2	11	9	11	7	11
FRIDAY	66	17.7%	11	12	8	9	10	16
SATURDAY	43	11.6%	5	4	7	9	10	8
Total	372	100.0%	33	77	56	62	65	79

BICYCLE ACCIDENTS BY TIME OF DAY

MID-7am	15	4.0%	1	1	1	3	3	6
7am-Noon	82	22.0%	9	13	14	13	17	16
Noon-4pm	102	27.4%	5	25	19	24	12	17
4pm-7pm	136	36.6%	12	27	20	17	26	34
7pm-9pm	25	6.7%	6	7	1	3	5	3
9pm-Mid	12	3.2%	0	4	1	2	2	3
Total	372	100.0%	33	77	56	62	65	79

BICYCLE ACCIDENTS BY PARTY AT FAULT

Driver	109	29.3%	10	26	22	15	15	21
Bicyclist	245	65.9%	22	46	33	43	48	53
Other	18	4.8%	1	5	1	4	2	5
Total	372	100.0%	33	77	56	62	65	79

During the five-year period bicyclists were considered to be at fault for 65.9 percent of all accidents. This percentage might be questionable because there is a common perception among bicyclists of an institutional bias against bicyclists that may result in an inappropriate assignation of blame.

The proportion of adult bicyclists involved in bicycle accidents, 66 percent, is higher than bicyclists under 14 years old. The number of active bicyclists has grown. There are more adult bicyclists than child bicyclists. Not only are more adults riding bicycles, but they are riding more often.

Male bicyclists continue to be more involved in accidents. On average for the past six years, 85 percent of the bicycle accidents have involved male bicyclists. This proportion carries across all age groups. While bi-

cycle accidents occur throughout the week, it is clear that most of the accidents occur during weekdays. Eighty percent of accidents occur between Monday and Friday. Almost 37 percent of the bicycle accidents occur between 4 PM and 7 PM. This time period also has the heaviest bicycle and motor vehicle usage.

Notable in the accidents map is the number of accidents that have occurred on Tennnyson Road where a bike lane exists, from Mission Boulevard to Industrial Boulevard

Of the number of accidents on Tennyson Road, in 76 percent of them the bicyclist has been at fault. The most reported causes for the accidents are:

1. Bicyclist riding on the wrong side, facing the motor vehicle traffic, is the primary factor in the collisions. This occurred in 59 percent of the accidents where the bicyclist was at fault.

2. Bicyclist failing to obey the stop sign. This occurred in 18 percent of the accidents where the bicyclist was at fault.

A bicyclist education program and a more strict traffic law enforcement might help reduce these types of accident.

3.7 Trip Reduction and Air Quality Benefits:

Bicycling does not consume petroleum products and is a non-polluting mode of transportation. Bicycling replaces short distance motor-vehicle trips, which are the least fuel-effcient and generate the most pollution per mile traveled. Motor vehicles emit many kinds of pollutants into the air. Carbon monoxide emissions from mobile sources (cars, trucks, buses, etc.) can be as high as 90 percent of all emissions in urban areas.

3.8 Existing Bicycle Facilities:

Knowledge of the existing facilities is important, as these will be used as the foundation for developing an citywide bicycle facility system. Types of bicycle facilities were inventoried and mapped, and these include bike lanes, bike routes and bike paths (Table 3 and Figure 5). The data was collected from the City's Streets Division and field observation.

The existing bikeways system in Hayward consists of the following facilities:

- Bike Paths (Class I)
- Bike Lanes (Class II)
- Bike Routes (Class III) and
- Sidewalk Bikeways

Bike paths (Class I) were constructed in the mid-1970's (Figure 6), except one on the Alameda County Flood Control Channel between Folsom Street and Pacheco Way.

The City constructed a 3,900 foot [1,189 m] bike path (Class I) in the landscaped area on the east side of Mission Boulevard in Fairway Park. HARD developed Class I bike paths within the Greenway in the PG&E right-of-way (Figure 7).

All of the Class I bike paths were constructed in locations that could physically accommodate them, but were not coincident with locations of bicycle commuting. These bike paths appear to attract only rec-

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION

BICYCLE MASTER PLAN

EXISTING BIKEWAYS

BIKE PATH (CLASS I)

BIKE LANE (CLASS II)

BIKE ROUTE (CLASS III)

SIDEWALK ROUTE

BY OTHERS

FIGURE 5

TABLE 3

SUMMARY OF *EXISTING* BIKEWAYS

	STREET NAME	LIMITS	WIDTH FT (Curb to Curb)	LENGTH FT	ADT (Two-way, 24 hr. traffic counts)	SPEED LIMIT (Miles per Hr)	EXISTING BIKEWAY TYPE	MEET CALTRANS STANDARDS	REMARKS
1	A	Highway 880 to Hathaway	91	1,100	39,200	30	4ft Lane	YES	
2	A	Hathaway to Burbank	87	1,286	34,800	30	4ft Lane	YES	
3	A	Burbank to Grand	84	2,380	29,600	30	4ft Lane	YES	
4	A	Grand to Montgomery	61	658	26,400	25	4ft Lane	YES	
5	ARDEN	Corporate to Baumberg	48	3,089	4,517	25	Route	YES	Bay Trail
6	BAUMBERG	Arden to Industrial	40	950	4,517	25	Route	YES	Bay Trail
7	BREAKWATER AV	Hayward Shorline to Whitesell	35	3,867	4,854	25	Route	YES	Bay Trail
8	BREAKWATER AV	Whitesell to Clawiter	47	2,426	4,854	25	Route	YES	
9	CALAROGA	La Playa to Kay	66	3,807	5,300	25	4ft Lane	YES	
10	CALAROGA	Kay to Tennyson	48	8,247	8,400	25	4ft Lane	YES	
11	CALAROGA	Tennyson to Catalpa	48	3,726	10,500	25	4ft Lane	YES	
12	CATALPA	Calaroga to Hesperian	48	1,200	3,200	25	4ft Lane	YES	
13	CATHY	Hesperian to Calaroga	48	889	4,500	25	4ft Lane	YES	
14	CORPORATE	Eden Landing to Arden	48	3,260	4,253	25	4ft Lane	YES	Bay Trail
15	D	Winton to Grand	68	1,700	12,129	25	4ft Lane	YES	
16	EDEN LANDING	Clawiter to Corporate	38-43	2,352	4,260	25	4ft Lane	YES	Bay Trail
17	HARDER	Santa Clara to CSUH	73	8,719	24,500	25	4ft Lane	YES	
18	HAYWARD	Campus to Parkside	64	3,509	9,800	35	Route	YES	
19	HESPERIAN	Skywest to Industrial Blvd.	71-84	16,965	42,000	35	Sidewalk Route	YES	
20	HESPERIAN	Industrial to South City Limit	84	305	42,000	35	Route	YES	Bay Trail
21	INDUSTRIAL	Baumberg to Hesperian	76	3,750	14,300	45	Route	YES	
22	INDUSTRIAL	Hesperian to 880	73	3,700	13,300	45	Route	YES	
23	INDUSTRIAL	880 to Russ	73	3,050	23,300	45	Route	YES	Connects to Bike Path on Alameda County Flood Control Channel
24	INDUSTRIAL	Russ to Railroad Tracks	73	3,600	24,900		Path	YES	Section parallel to Bike Path on Alameda County Flood Control Channel (County maintained)
25	INDUSTRIAL	Railroad Tracks to Dixon	73	1,550	24,900	45	Route	YES	Connects to Bike Path on Alameda County Flood Control Channel
26	MISSION	Fairway to South City Limit	100	3,650	24,700	40	Path	YES	
27	PATRICK	Gading to Tennyson	73	3,400	13,600	25	Route	YES	
28	SANTA CLARA	A to Harder	72	8,359	27,000	25	4ft Lane	YES	
29	TENNYSON	Dixon to Highway 880	87	7,600	38,900	35	4ft Lane	YES	
30	TENNYSON	Highway 880 to Hesperian	87	2,065	41,900	35	4ft Lane	YES	
31	TENNYSON	Hesperian to Industrial	72	3,070	10,100	35	4ft Lane	YES	
32	WINTON	D to Myrtle-Soto	68	200	15,930	35	4ft Lane	YES	
		TOTAL LENGTH OF EXISTING BIKEWAYS =		114,429 FT.	= 21.67 MILES				

reational bicyclists, principally children from nearby neighborhoods.

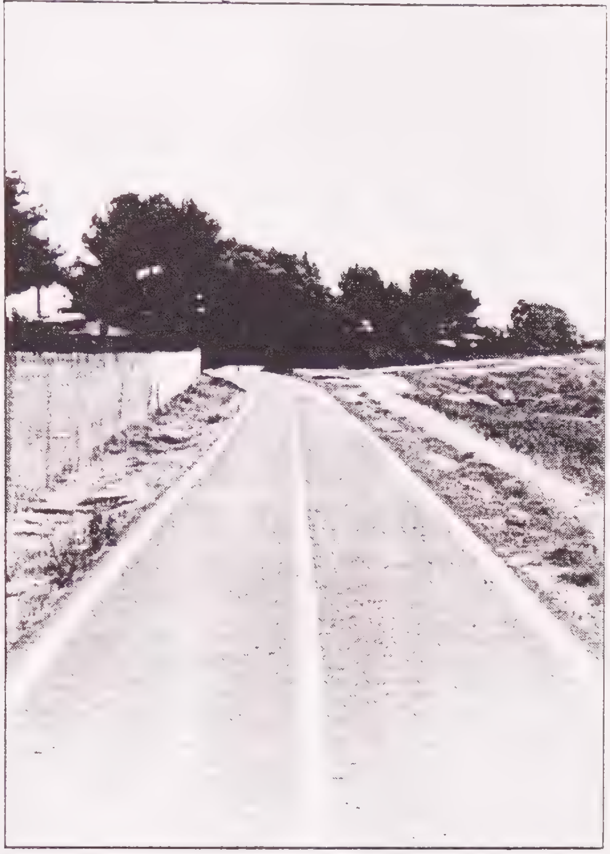

Figure 6: Bike path on Alameda County Flood Control Channel

Figure 7: Existing bike path on HARD's Greenway

The first bikeways in the City of Hayward were bike routes (Class III), installed on several streets in 1972. Only the sidewalk bikeway on Hesperian Boulevard (Cathy Way to Industrial Blvd.) still exists.

For implementation of the 1979 bicycle master plan, facilities were categorized by priority: demonstration projects, incorporation with new construction and reconstruction projects. The existing four foot wide [1.2 m-wide] bike lanes on Tennyson Road (Industrial Boulevard to Dixon Street), Calaroga Avenue (La Playa Drive to Catalpa Way), Cathy Way (Hesperian Boulevard to Calaroga Avenue), Santa Clara Street (A Street to Jackson Street) and Harder Road (Jackson Street to Westview Way) were installed as part of the demonstration project phase.

The designated demonstration streets were to provide a minimum route system that would provide some continuity in Hayward, linking some of the major traffic generators such as Chabot College, Southland Shopping Center, California State University and South Hayward BART Station.

The four foot [1.2 m] bike lanes (Class II) on D Street (Winton Avenue to Grand Street) and A Street (I-880 Freeway to Montgomery Street) were included as part of the widening projects, the former in 1980 and the latter in 1989 (Figures 8 and 9).

The bicycle facility on Industrial Parkway (Hesperian Boulevard to Ruus Road) is a Bike Route (Class III). Only two "Bike Route" signs remain in place. Most of the signs have been stolen or destroyed by vandals and need to be replaced.

The existing bicycle facility on Hesperian Boulevard is a sidewalk route. The use of this type of facility is no longer recommended for the reasons explained in Section 4.8.5 of this Master Plan.

Figure 8: Existing bike lane on D Street

Figure 9: Existing bike lane on A Street

Other facilities are part of the San Francisco Bay Trail (there is a combination of both bike lanes and bike routes).

The Bay Trail Plan shows a proposed development of a regional bicycling trail around San Francisco and San Pablo Bays (Figure 10). The plan was prepared by the Association of Bay Area Governments (ABAG) pursuant to Senate Bill 100, which mandated, that the Bay Trail:

- Provide connections to existing park and recreation facilities.
- create links to existing and proposed transportation facilities and,
- be planned in such a way as to avoid adverse effects on environmentally sensitive areas.

In 1993, the City of Hayward implemented the Bay Trail with a mix of bike lanes and bike routes. The Bay Trail Design Guidelines require the installation of bike lanes before the facility can be considered a completed Bay Trail segment. Under these conditions, the bikeways on Arden Road, Baumberg Avenue and Industrial Boulevard would need to be upgraded to bike lanes.

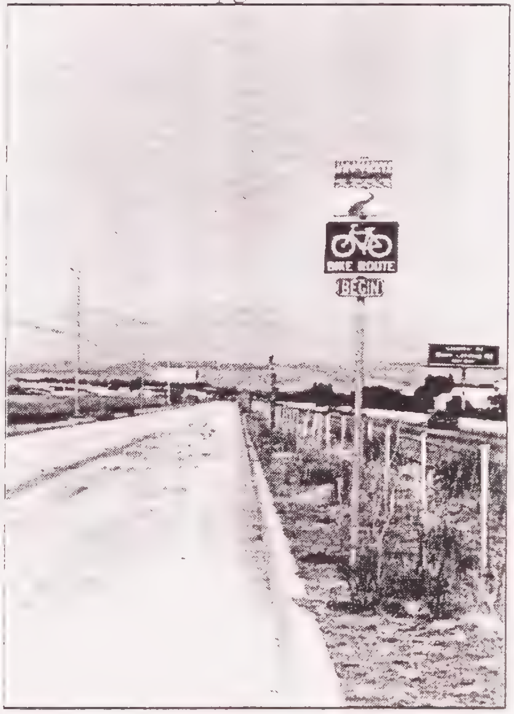

Figure 10: Bike Route on Breakwater St.

3.9 Education and Awareness

The Hayward Police Department's Traffic Bureau has developed a program to educate

the public in traffic safety. The goal of this recently implemented program is to take a positive and aggressive approach concerning the enforcement of bicycle and pedestrian laws. Education will also be a major focus of this program. A Traffic Safety Coordinator will be responsible for the program.

The Traffic Safety Coordinator will go to the elementary schools within the City limits educating the children on bicycle and pedestrian safety. The targeted age group for this program will be pre-schoolers thru the sixth grade. The Coordinator will cover State and Local Laws pertaining to bicycle and pedestrian safety. Emphasis will also be directed towards making them aware of their surroundings when walking or riding. A talking patrol car will be used for the smaller children. Not only will the learning experience be enhanced, but it will be fun and memorable.

The Police Department has also put together a bicycle helmet diversion program, giving juvenile helmet violators the opportunity to participate in a "Bicycle Safety" class in lieu of paying a fine. The targeted age group is 14 years or younger. Juveniles up to the age of 17 years may be included, however, eligibility will be determined on a case by case basis. This program is a joint effort utilizing the Traffic Bureau, Youth and Family Services Bureau-School Resource Officers with cooperation of the Juvenile Traffic Court.

4

BICYCLE TRAVEL AND MAJOR DEMAND CORRIDORS

Before determining the exact location of the major components of the bicycle network it is necessary to identify major destinations of bicycle trips and travel corridors.

4.1 Accommodating Group A and Group B/C riders

Bicycling is essentially a localized, short distance activity, hence bicyclists are very sensitive to factors which affect the choice of route by making travel times longer. This means that, just like motorists, most bicyclists want to use the shortest, most direct route to their destinations.

Group A riders will be best served by designing all roadways to accommodate shared use by bicycles and motor vehicles. Group B/C bicyclists will be best served by a network of neighborhood streets and designated bicycle facilities.

Bicyclist characteristics are not the only criteria to take into account when designing the bikeway network. Other variables discussed in the following sections should also be considered.

4.1.1 Accessibility: In locating a bicycle route, consideration should be given to the provision for frequent and convenient bicycle access. Every residential area or high priority destination (employment center, public buildings, schools, shopping centers, parks) should have reasonable access by bicycle. Most bicycle transportation planners follow the standard that each urban home should be no farther than a quarter to one-half mile from designated bikeways.

4.1.2 Directness: For utilitarian bicycle trips, facilities should connect traffic gen-

erators and should be located along a direct line convenient for users. Most bicyclists with a specific destination will not use even the best bicycle facility if it greatly increases the travel distance or trip time over that provided by less desirable alternatives. This is less of a factor for recreational cycling, where often there is no specific destination. It is of general knowledge among bicycle transportation planners that over the course of two miles, most bicyclists will not deviate more than two blocks from direct route to use a designated bike route.

4.1.3 Continuity: The proposed network should be complete and have as few gaps as possible within the City as well as with adjacent agency facilities. If gaps exist, they should not include traffic environments such as high volume or high-speed motor vehicles with narrow outside lanes that are unpleasant or threatening to the rider. If barriers exist that will impede system continuity, then improvements should be planned that will alleviate those barriers. Facilities should be continuous, with a consistent surface and require a consistent level of bicycle skill to use. Usually this will require the facility being of a consistent class.

4.1.4 Conflict: In a perfect traffic environment there would be complete separation among bicyclists, motorists and pedestrians. Because this is not physically possible in the City of Hayward, the route should present as few conflicts between bicyclists and motor vehicle operators as possible.

4.1.5 Cost: Cost would include both the costs of establishing and maintaining the system and safety and education programs. It is important that a lack of funds not result in a poorly designed or constructed facility.

4.1.6 Ease of Implementation: The ease or difficulty in implementing proposed changes depends on presence of parking, neighborhood preferences, available right-of-way or road width, and existing and future traffic operations and patterns.

4.2 Significant Destinations:

One of the first steps in determining where bicycle facilities should exist within the City of Hayward is to identify key trip origins and destinations. These are locations where a significant number of bicycle trips start, or may potentially start, and locations which may draw a significant number of bicyclists (destinations). To a large degree, commuting bicycle travel is going to mirror motor vehicle travel since bicyclists have the same origins and destinations as motorists.

An appropriate way to identify desired routes for bicyclists is to plot trip-generators such as, educational facilities (middle and high schools, Chabot Community College and California State University); commercial areas (Southland Mall and the Downtown Area), public facilities like City Hall, public libraries, post offices, the Police Department, municipal court and parks (i.e. Garin Park and Sulphur Creek Park.)

Intermodal transfer stations such as the two BART stations and the future inter-city rail station in the Burbank Neighborhood are included as destinations for potential

bicyclists. Also, special features like the shoreline and the Bay Trail are shown as destinations and routes.

Figure 11 shows those important destinations: schools, commercial areas, public facilities, main parks, bike shops and the location of large employers (100+ employees).

Surveys show that the mean bicycle trip is 2.1 miles [3.4 km] and commute trips may be longer (between 5 and 6 miles [8 and 9.6 km]). Since in a general sense workplaces are a destination for everyone, Table 4 gives some base to work transportation characteristics for Hayward.

TABLE 4

City of Hayward 1994 Transportation Characteristics

Characteristics		Persons	Percentage
Travel time to Work:			
	0-4 minutes	952	1.4%
	5-9 minutes	4,704	7.1%
	10-14 minutes	9,321	14.0%
	15-19 minutes	12,299	18.5%
	20 or more minutes	39,263	59.0%
Means of Transportation to Work:			
	Walked	1,384	2.1%
	Bicycle	458	0.7%
	Motorcycle	241	0.4%
	Private Vehicle	61,783	91.5%
	Public Transportation	2,310	3.4%
	Work at home	969	1.4%
	Other means	363	0.5%

Source: Census 1990[1]

Between 1980 and 1990 the percentage of persons using public transportation to go to work had decreased. In 1980, 6.9 percent of the working population used public transportation and in 1990 only 3.4 percent did. Meanwhile, the use of private automobiles increased from 85.9 percent in 1980 to 91.5 percent in 1990. This increase led to a decrease in the use of non-motorized means of transportation to work. Walking to work decreased from 2.9 to 2.1 percent. Bicycling cannot be compared directly because, in the 1980 Census, it was lumped in with the "other means" category. As a whole, this category ("other means") decreased from 3.4 to 1.2 percent.

The increase of Hayward residents that rely on private automobile use might be related to the significant increase of persons 16

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[1] The U.S. Census "Journey to Work" survey is conducted every ten years and is targeted toward participation in the work force aged 16 or above. Census survey only reports on travel to and from work, excluding trips to school, shopping and other.

DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION

BICYCLE MASTER PLAN

MAJOR DESTINATIONS

GOVERNMENT OFFICES	G
PARK OR RECREATION	P
SCHOOL (MIDDLE, HIGH AND COLLEGE)	S
BIKE SHOP	B
LARGE EMPLOYER (100+ EMPLOYEES)	E
OTHER (POST OFFICE, LIBRARY, ETC.)	O
INDUSTRIAL	▥
COMMERCIAL	▨
RESIDENTIAL	▩
OPEN SPACE	⬚

FIGURE 11

THIS MAP IS A GENERAL REPRESENTATION OF THE OFFICIAL MAP ON DISPLAY AT THE CITY OF HAYWARD PLANNING DEPT.

years of age or older working outside Alameda County, mainly in Santa Clara, San Mateo and Contra Costa Counties. The fact remains that residence/work location influences the choice of transportation used to get to work.

Applying the Association of Bay Area Governments Projections for the City of Hayward and assuming that the existing percentage of bicycle commuters is maintained, by the year 2000 the number of persons using a bicycle to go to work will increase from 458 to 551 and to 627 by the year 2010. But if the objectives of this master plan are successful, by the year 2000 the number of commuters bicycling to work will increase from 458 to 1,100.

4.3 Major Employers:

Major employers and employment centers are significant traffic generators and potential sites for bicycle commuting programs. In 1994 the City of Hayward, through the Engineering and Transportation Division developed a transportation survey for all large employers (100 employees or more). The transportation survey process was required at that time by the Trip Reduction Ordinance (TRO) of the City of Hayward, the Alameda County Congestion Management Agency (CMA) and the Bay Area Air Quality Management District (BAAQMD). Some of the findings from this survey are shown on Table 5.

TABLE 5

City of Hayward 1994
Large Employers (100 plus employees) Transportation Characteristics

Characteristics		Employees	Percentage	Potential Commute Alternative
Distance to Work:				
	0-5 miles	3,376	33.2%	Bicycle/Walk
	6-10 miles	2,346	23.0%	Transit
	11-20 miles	2,331	22.9%	Carpool
	21+ miles	2,130	20.9%	Vanpool/Buspool
Average: 14.7 miles	Total	10,183	100.0	
Means of Transportation to Work:				
	Work at home (Telecommute)	180	0.4%	
	Walked	443	0.9%	
	Bicycle	278	0.6%	
	Motorcycle	171	0.4%	
	Club Bus/Buspool	26	0.1%	
	Public Transit	928	2.0%	
	Vanpool	73	0.2%	
	Carpool	5,566	11.9%	
	Drove alone	38,968	83.5%	
	Total	46,633	100.0%	

Source: City of Hayward TDM Program, 1994

For the first question "Distance to Work", only 10,183 employees gave an answer. Of those respondents, 33.2 percent, given the distance they travel to work, could use bicycling or walking as the means of transportation to work. Compare that percentage to the actual number of bicycling and walking and you obtain a combined total of 1.5 percent. On the other hand, the question about "Means of Transportation to Work" yielded 46,633 answers. As expected the majority of commuters get to work by driving alone (83.5 percent.) Notable is the number of employees that telecommute, 0.4 percent.

4.4 Identification of Bicycle Travel Corridors:

Bikeways (bike lane, paths and routes) should be located in areas where use can be maximized. Generally, bikeways should be located within the same corridors as arterials and collectors since bicyclists have the same origins and destinations as motorists.

Determining non-motorized travel corridors for the City of Hayward is not the same as identifying the routes that bicyclists currently use. Instead, travel corridors can be thought of as "desired lines" connecting neighborhoods that generate trips with other areas in the City that attract a significant number of trips.

For motor-vehicle traffic, most peak morning trips are made between residential neighborhoods and employment centers. During the afternoon peak, the opposite is true. It is assumed that people on bicycles want to go to the same places as people in cars (within the constraints imposed by distance) and the existing system of streets reflects the existing travel demands of the community. Similar thoughts were reflected in the 1979 Bicycle Master Plan: "The major streets were found to be the preferred cycling routes, principally because they are the most convenient links between activity centers, such as schools, shopping areas, and parks. This situation is common to most cities and is not easily changed because cyclists, like automobile drivers, will usually take the shortest route between origin and destination."

Although the use of existing traffic flows is a useful predictor of bicyclists desired routes, other factors are to be considered.

The factors to be considered in choosing the location for bicycle facilities vary depending on the situation. The most important variables are described below. Typically the following criteria will be used to first identify a general bicycle corridor, then to site the bicycle facility within that corridor and, finally, to choose the desired facility type on a specific street segment. The same criteria will be used to choose the bicycle facility treatment type for a street segment as is used to select a street segment within a corridor.

4.5 The Neighborhood Planning Program:

Hayward's General Policies Plan provides for the preparation of neighborhood plans to further refine City-wide policies. The City of Hayward Neighborhood Planning process was approved by the City Council on May 13, 1986. Neighborhood plans are to be prepared for 16 study areas within the City. The neighborhood plans can be used

as a primary source of information on public improvements.

Concerns regarding bicycle use were raised during the development of the neighborhood plans. Existing conditions which discourage bicycle riding were identified by the different task forces in order to come up with suggestions for encouraging use of bicycles. A summary of bicycle facility recommendations in the neighborhood plans is as follows:

Mission Garin Neighborhood Plan (Adopted by City Council Resolution No. 87-123 of May 19, 1987 and Resolution No. 87-219 of August 4, 1987):

- No specific project mentioned. Nevertheless, one of the policies of this neighborhood plan states: "Alternatives to automobile transportation will be encouraged through development policies and provision of transit, bike and pedestrian amenities."

Burbank Neighborhood Plan (Adopted by City Council Resolution No. 88-177 of July 26, 1988):

- Bikeways on Sutro and Dean to connect to Bart Station
- Improve bike and pedestrian access to transit stations, shopping centers, and job centers.

Tennyson-Alquire Neighborhood Plan (Adopted by City Council Resolution No. 89-218 of July 28, 1989):

- Keep Tennyson Road with existing bike lanes
- Bike lane on Huntwood Avenue
- Bike lanes on Folsom (between Ruus Road and Huntwood Avenue)
- Bike lanes on Ruus Road
- Bike lane along Ward Creek, south of Folsom and connect to Ruus-Industrial Crossing
- Bike crossing at Ruus-Industrial Island
- Continue bikeway along Industrial Parkway SW to a "Channel A" Bay Trail connection as well as to Dyer Triangle
- Amend Bicycle Facilities Plan to reflect Neighborhood Plan
- The City has a license agreement with Alameda County Flood Control to develop trails on Ward Creek and Channel "A"

Harder-Tennyson Neighborhood Plan (Adopted by City Council Resolution No. 89-285 of October 3, 1989):

- Bike lanes on Huntwood and Tampa
- Complete Greenway Bike Path

Mt. Eden Neighborhood Plan (Adopted by City Council Resolution No. 90-177 of July 17, 1990):

- Bike lanes on Depot Road (from Hesperian to Industrial)
- Bike route on Middle Lane
- Bike lane connection to Chabot College

Jackson Triangle Neighborhood Plan (Adopted by City Council Resolution No. 91-024 of January 15, 1991):

- Bike route on Soto Road
- Bike route on Whitman Street
- Complete Greenway Bike Path

Mission Foothills. Neighborhood Plan (Adopted by City Council, Resolution No. 92-054 of March 17, 1992):

- Develop bikeway roughly following the fault corridor
- Encourage bus racks for carrying bikes uphill

Upper "B" St. Neighborhood Plan (Adopted by City Council, Resolution No. 92-264 of September 15, 1992):

- Bike route on "A" Street
- Bike route on Second Street

North Hayward Neighborhood Plan (Adopted by City Council Resolution No. 94-175 of June 19, 1994):

- Bike path along the San Lorenzo Creek Channel and
- Bike path along the Western Pacific-BART Line

Longwood-Winton Grove Neighborhood Plan (Adopted by City Council Resolution No. 94-211 of September 27, 1994):

- Bike lane on "A" Street From Hesperian Boulevard to Highway 880
- Bike lane on frontage road on Hesperian Boulevard.

Santa Clara Neighborhood Plan (Adopted by City Council Resolution No. 95-137 of July 11, 1995):

- No mention of bicycle related topics.

Fairway Park Neighborhood Plan (Adopted by City Council on December 5, 1995 and January 9, 1996):

- Connect the existing bicycle facilities and provide extensions to Garin Regional Park and the South Hayward BART Station.

Southgate Neighborhood Plan (Adopted by City Council Resolution No. 96-211 on October 1, 1996):

- Do not encourage bicycle use along Hesperian Boulevard; either on the roadway or on the sidewalk.
- Encourage the use of the existing bicycle route on Calaroga Avenue

Glen Eden Neighborhood Plan (Adopted by City Council Resolution No. 96-209 on October 1, 1996):

- The Task Force believes there is a need to extend the Class I bicycle path westward along the proposed Eden Greenway from Hesperian Boulevard to Industrial Boulevard, as called for in the Hayward Area Recreation and Park District's Master Plan.
- The Task Force encourages the City to include more Class II bicycle lanes in any future street improvement projects, particularly Hesperian Boulevard and Industrial Boulevard.

Whitman-Mocine Neighborhood Plan (In progress)

Hayward Highlands Neighborhood Plan (To start Spring 1997)

4.6 Selecting Specific Route Alternatives:

The corridor identification procedure determines desired routes for bicycle travel between various locations but does not identify specific routes within these corridors.

Based on points of destination, bicycle accident statistics, existing facilities and the recommendations from the neighborhood plans, the degree to which a specific route meets the needs of anticipated users as opposed to other route options, the possible cost and extent of construction required to implement the proposed facility treatment, the ease of implementation, the proposed design treatment and the opportunity to implement the proposed design treatment in conjunction with planned street construction or reconstruction projects, specific bikeways were incorporated in Figure 12 to show both existing and proposed bikeways.

This does not mean that the streets that were not selected are not available for use by bicyclists. Once the desired routes for bicycle travel were identified, they were evaluated using the Federal Highway Administration criteria in the document "Selecting Roadway Design Treatments to Accommodate Bicycles"[1]. The evaluation helped to determine the appropriateness of the selected routes to serve either Group A bicyclists, Group B/C bicyclists or both.

The most significant traffic operations factors for determining the appropriateness of various design treatments are:

- the design bicyclist.
- right of way
- traffic volumes
- average motor vehicle operating speeds
- traffic mix (automobiles, trucks, and buses)
- on-street parking
- sight distance
- number of intersections and entrances

The FHWA "Selecting Roadway Design Treatments to Accommodate Bicycles" contains tables of recommended facilities for different situations. All streets and highways where bicycles are permitted to operate should, as a minimum, incorporate the design treatments recommended in the tables for Group A bicyclists. Where it is determined that use by Group B/C bicyclists is likely, the tables recommending design treatments for Group B/C should be used since Group B/C design treatments will also accommodate Group A bicyclists.

Most State and Local plans designate bicycle facilities by the names referenced in the AASHTO Guide for the Development of Bicycle Facilities. However, California uses a different set of bikeway facility designations:

- Class I Bikeway = Bike Path
- Class II Bikeway = Bike Lane
- Class III Bikeway = Bike routes or wide curb lane

There is no explanation to the origin of these numerical designations, or to the advantages thereof. The only benefit of not using them appears to be that the numbers tend to represent a hierarchy of facilities, when in actuality each type of facility has its own specific function and purpose. The basic principles adopted in the FHWA report are:

- There are three classes of design bicyclist: group A (Advanced), group B (Basic) and group C (Child).

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[1]. FHWA Publication No. FHWA-RD-92-073. *Selecting Roadway Design Treatments to Accommodate Bicycles.* Wilkinson, W.C., January 1994.

- A policy goal of increasing use implies a supply-driven approach - "if you build it they will come."

- Every street and highway should be designed and maintained for shared use by motor vehicles and bicycles.

4.7 Tables of Recommended Treatment:

To ultimately determine the appropriate facility type, once the desired lines of travel were established, they were compared to a host of traffic operation and design factors such as:

- Traffic volume:
  - under 2,000 ADT
  - 2,000 to 10,000 ADT
  - over 10,000 ADT

- Average motor vehicle speeds:
  - 20 to 30 mph
  - 30 to 40 mph
  - 40 to 50 mph
  - over 50 mph

- traffic mix, especially with regard to bus and truck traffic

- On-street parking

- sight distances

- number of intersections

Recommendations are made for wide curb or shared lanes (Class III) and bicycle lanes (Class II).

Recommendations are provided for the width of the various roadway treatments. In any case, these minimum widths are not less than the minimum established by Caltrans[1].

Care has been taken to provide direct connections with the bicycle facilities of adjoining Cities and Alameda County.

4.8 Types of Bikeways:

4.8.1 Separate Bicycle Paths: Generally, bike paths should be used to serve corridors not served by streets and highways or where wide rights-of-way exist permitting such facilities to be constructed away from the influence of vehicle traffic.

Bike paths should offer opportunities not provided by the road system. They can either provide a recreational opportunity or, in some instances, can serve as direct high-speed commuter routes if cross-flow by motor vehicles can be minimized.

The most common uses are along ocean fronts, flood control channels, utility rights-of-way, abandoned railroad rights-of-way, within college campuses, or within and between parks. There may also be situations where such facilities can be provided as part of planned developments.

Another common application is to eliminate impediments to bicycle travel caused by construction of freeways, or because of the existence of natural barriers. Caltrans classifies separate bicycle paths as Class I Bikeways. Bicycle paths are also referred to as "multi-use trails", "hiker/biker trails" or

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[1] California Department of Transportation, Bikeway Planning and Design, Reproduced from Caltrans Highway Design Manual, Fourth Edition, Chapter 1000, July 1993.

"green-ways".

Furthermore, Section 2373 of the California Streets and Highways Code describes Class I bikeways as serving "the exclusive use of bicycles and pedestrians." If significant pedestrian use is anticipated, separate facilities for pedestrians are necessary to minimize conflicts.

Caltrans requirements state that two way bicycle paths should be at least eight feet wide. The American Association of State Highway and Transportation Officials Guidelines recommend an all paved width for a two-directional bicycle path of ten feet, but in some instances, a minimum of eight feet is acceptable. Per Caltrans, the minimum paved width for a one-way bike path shall be five feet. One-way bicycle paths should be used only in extreme cases because without strict enforcement they will be used as two-way facilities.

Bicycle paths are not included in the FHWA recommended treatment because they are off-street bikeways facilities and both Group A and B/C riders, as well as other non-motorized users, can enjoy the paths with no motor vehicle traffic on them.

Bicycle paths should be thought of as extensions of the highway system that are intended for the exclusive or preferential use of bicycles in much the same way as freeways are intended for the exclusive or preferential use of motor vehicles.

Bike paths immediately adjacent to streets are not recommended. They should not be considered a substitute for the street because many bicyclists will find it less convenient to ride on these types of facilities as compared with the streets, particularly for utility trips.

Some problems with bike paths located immediately adjacent to roadways are that

1) Unless a bike path is located on each side of the road it requires one direction of bicycle traffic to ride against automobile traffic;

2) When the bike path ends, bicyclists going against traffic will tend to continue to travel on the wrong side of the street, and this wrong way travel by bicyclists is a major cause of bicycle/automobile accidents; and,

3) bicyclists using the bike path generally are required to stop or yield at all cross streets, while bicyclists using the highway usually have priority over cross traffic, because they have same right of way as motorists.

4.8.2 Bicycle Lanes: The AASHTO[1] Guide defines a bicycle lane as "a portion of the roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists."

Bikes lanes are established along streets in corridors where there are distinct needs that can be served by them. Their purpose should be to improve conditions for bicyclists in the corridors and to better accommodate bicyclists through corridors with insufficient room for safe bicycling on existing streets.

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[1] American Association of State Highway and Transportation Officials, Guide for the Development of Bicycle Facilities, August 1991

Bike lanes are desirable when traffic volumes or speeds are such that wide curb-lanes are not practical. Other corridors that may warrant bike lanes include:

1. Corridors with heavy bicycle traffic, where bicyclists must frequently pass each other traveling in the same direction;
2. Insufficiently lighted corridors on which frequent night time bicycle riding is expected; and,
3. Corridors on which lane designation is not complicated by frequent residential or commercial driveways or roadway intersections.

Caltrans refers to bike lanes as Class II Bikeways. Bike lanes have a strong channeling effect on motor vehicles and bicycles. The Caltrans Highway Design Manual describes this effect very clearly:

> Bike lane stripes are intended to promote the orderly flow of traffic by establishing specific lines of demarcation between areas reserved for bicycles and lanes to be occupied by motor vehicles. This effect is supported by bike lane signs and pavement markings.
>
> Bike lane striping can increase bicyclists' confidence that motorists will not stray into their path of travel if they remain in the bike lane. Likewise, with more certainty as to where bicyclists will be, passing motorists are less apt to swerve towards opposing traffic in making certain they will not hit the bicyclists.

The impact of marked bike lanes is particularly important for Group B/C riders. Bike lanes can be provided by widening existing roadways, paving shoulder areas, eliminating parking, or using emergency lanes for disabled vehicles.

Bike lanes should always be one-way facilities and flow in the same direction as adjacent motor vehicle traffic. Two-way bicycle lanes on one side of the roadway are undesirable because they promote riding against the flow of traffic. As mentioned before, wrong-way riding is a major cause of bicycle accidents.

Bike lanes are not advisable on long, steep downgrades (e.g. Carlos Bee Boulevard, Hayward Boulevard, Fairview Road. etc.), where high bicycle speeds can be created. As grades increase, downhill bicycle speeds increase, thereby increasing the danger of riding near the edge of the roadway. In such situations, bicycle speeds can be expected to approach those of motor vehicles, and experienced bicyclists generally move into the motor vehicle lane to increase sight distance and maneuverability.

4.8.3 Bicycle Routes: Bicycle Routes are defined in the AASHTO guidelines as being a "segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers little or nothing beyond adequate maintenance and removal of dangerous grates and other surface irregularities needs to be done for bicyclists"[1]

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[1] AASHTO. Guide for the Development of Bicycle Facilities. Revised in 1991

Bicycle Routes consist of roads where nothing has been done to change the physical characteristics, and signs have been installed along them indicating that it is a "preferred" or "suggested" route for bicyclists to take.

Those using bike routes point to the promotional benefits of signing routes and the potential for directing bicyclists away from busier or more dangerous routes.

These bicycle routes are the equivalent of California's Class III Bikeways. Caltrans defines Class III Bikeways as the shared facilities which serve either to: 1) provide continuity to the bikeway system; or 2) designate preferred routes through high-demand corridors.

As with bike lanes, designation of bike routes should indicate to bicyclists that there are particular advantages to using these routes as compared with alternative routes. Bike routes are established along streets that cannot be served by Class I or II bikeways.

Class III facilities are shared facilities, either with motor vehicles on the roadway or with pedestrians on sidewalks, and in either case bicycle usage is secondary. Caltrans does not indicate minimum widths for Class III bikeways, because "the acceptable width is dependent on many factors, including the volume and character of vehicular traffic on the road, typical speeds, vertical and horizontal alignment, sight distance, and parking conditions."

Not everyone favors the use of bicycle routes because:

- The routes often do not go where bicyclists want or need to go.

- The group B/C riders are not given the sense of protection they desire.

- Implementation of bike routes has been poor in many instances, consisting of a sign that says "BIKE ROUTE" but, with no directional or distance information to help a rider navigate a whole route successfully.

- Motorists get the impression that bicyclists should be using streets designated as bike routes[1].

4.8.4 Wide curb lanes: Like bike lanes, wide curb-lanes are placed along streets in corridors where there is significant bicycle demand. Unlike bicycle lanes, however, wide curb-lanes are for shared use by bicycle and motorized traffic. The added lane width provides greater room for maneuvering and increases the lateral distance between bicyclists and vehicles.

These lanes are another form of the Caltrans Class III Bikeways as explained above. Wide curb lanes, regardless of parking restrictions, can be defined as the right-most through traffic lanes that are substantially wider than 12 feet.

A lane with 14 feet of usable width is desired in an urban setting which allows a motor vehicle and a bicycle to operate side by side. Widths greater than 14 feet may encourage the undesirable operation of two motor vehicles in one lane. AASHTO guide-

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[1] Ronkin. "Beyond Bike Routes Building a System of Bikeways". Pro Bike News, Vol. 13, No. 8, August 1993. Bicycle Federation of America. Washington, DC.

lines considers a lane width of 14 feet of usable width as being desirable on road segments where parking is not permitted on the curb lane.

Wide curb lanes will be most applicable on major streets (arterials and collectors) where Group A riders will likely be operating. These roadways with wide curb lanes should be signed as bicycle routes.

4.8.5 Sidewalk Routes: Providing a sidewalk bicycle path is unsatisfactory for a variety of reasons. Sidewalks are typically designed for pedestrian speeds and are not safe for higher speed use.

Conflicts are common between pedestrians traveling at low speeds (exiting stores, parked cars, etc.) and bicyclists, as are conflicts with fixed objects (e.g., parking meters, utility poles, sign posts, bus benches, trees, fire hydrants, mail boxes, etc.). Walkers, joggers, and roller skaters can, and often change their speed and direction almost instantaneously, leaving bicyclists insufficient time to react and avoid collisions.

Similarly, pedestrians often have difficulty predicting the direction an oncoming bicyclist will take. At intersections, motorists are often not looking for bicyclists (who are traveling at higher speeds than pedestrians) entering the crosswalk area, particularly when motorists are making a turn. In addition, use of sidewalks can encourage wrong-way bicycling.

It is important to recognize that the development of extremely wide sidewalks does not necessarily add to the safety of sidewalk bicycle travel. Wide sidewalks encourage higher-speed bicycle use and can increase potential for conflicts with motor vehicles at intersections, as well as with pedestrians and fixed objects.

The 1979 Bicycle Master Plan established a sidewalk route along Hesperian Boulevard, but for the reasons stated above, will be eliminated in this master plan.

5

PROPOSED BICYCLE NETWORK

The Proposed Bicycle Network was designed to facilitate bicycle travel, minimize adverse impacts on motor vehicle traffic and minimize costs.

The proposed system consists of 39.7 miles [63.5 kilometers] of new bikeways and 21.7 miles [34.7 kilometers] of existing bikeways for a total of 61.4 miles [98.2 kilometers] of bikeways.

A summary of the proposed system is shown in Table 6. Figure 12 illustrates the proposed bicycle network and the sections that follow describe the new bikeways, supplemental bicycle facilities and the recommended construction standards.

5.1 PROPOSED IMPROVEMENTS:

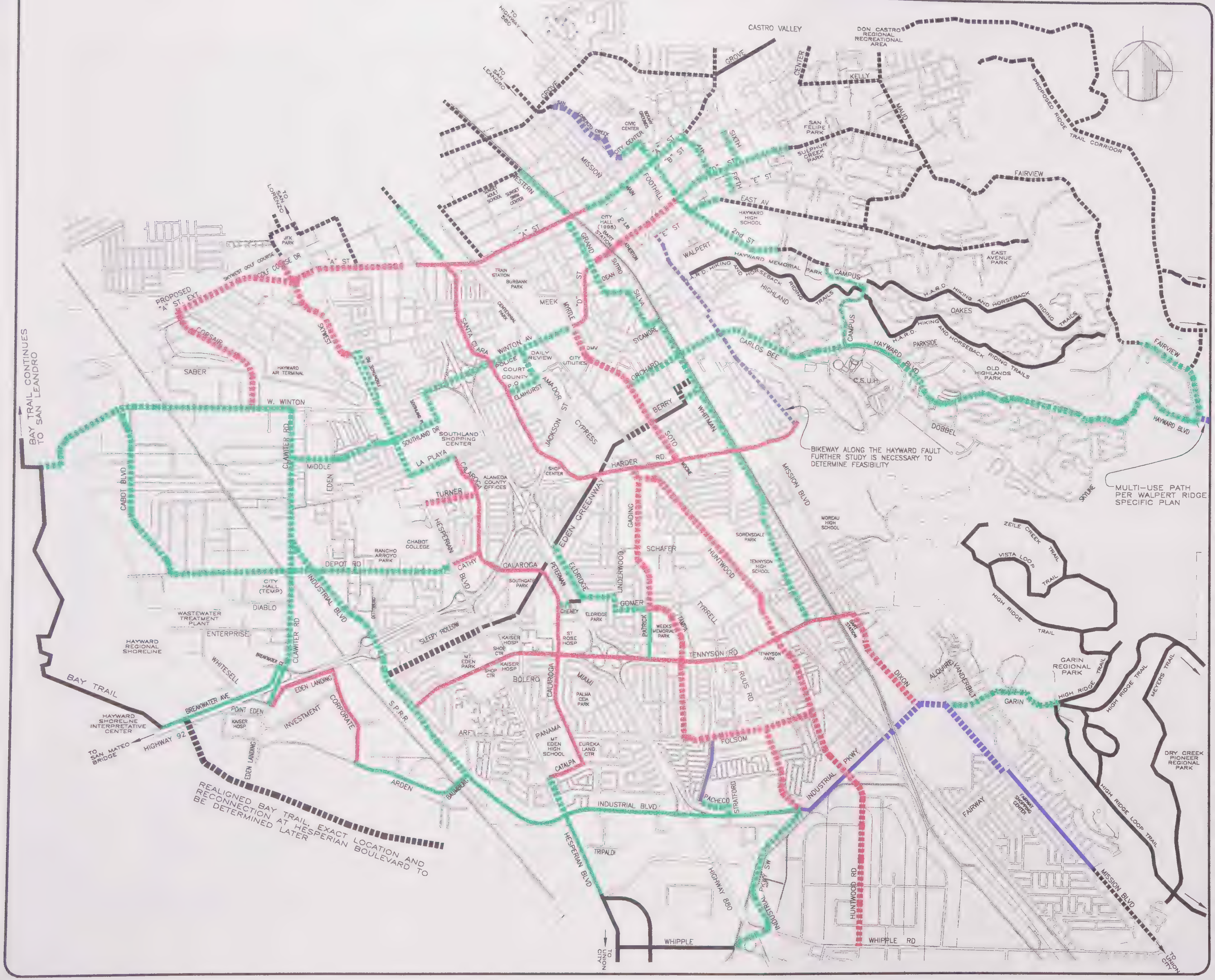
5.1.1 Description of Proposed Bikeways

The type of bikeway recommended is based on existing conditions. If in the future conditions change and it is feasible, consideration should be given to upgrade the proposed bikeway facility, for example, from a bike route (Class III) to a bike lane (Class II) or from a bike lane (Class II) to a bike path (Class I).

"A" Street:
"A" Street is a major east-west arterial crossing the northern sections of the City. It is a four-lane street, having a raised median only from I-880 to Grand Street, the remainder is striped without a median. This street has variable widths ranging from 61 feet [18.6m] to 67 feet [20.4m]. Traffic volumes range from 19,900 to 33,300 ADT. The street traverses residential, commercial and the downtown areas. Parking is provided along most segments of the street. In 1989, "A" Street was widened from I-880 to Grand Street and incorporated a four foot [1.2 m] bike lane (Class II) that extends to Montgomery St. This bike

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION

BICYCLE MASTER PLAN



BICYCLE NETWORK PLAN

	EXISTING	PROPOSED
BIKE PATH (CLASS I)	━	┅
BIKE LANE (CLASS II)	━	┅
BIKE ROUTE (CLASS III)	━	┅
BIKEWAY BY OTHERS	━	┅

FIGURE 12

TABLE 6

SUMMARY OF *PROPOSED* BIKEWAYS

	STREET NAME	LIMITS	WIDTH FT (Curb to Curb)	LENGTH FT	ADT (Two-way, 24 hr. traffic counts)	SPEED LIMIT (Miles per Hr)	PROPOSED BIKEWAY TYPE (WL=Width of Traffic Lane)	REMARKS
1	A	Hesperian to Highway 880	72	2,850	19,900	35	4ft Lane	A 4 ft bike lane is being included in the A St. Widening Proj No 5155
2	A	Montgomery to Mission	61	898	26,400	25	Route (WL 14ft)	
3	A	Mission to Foothill	56	1,118	26,400	25	Route (WL 14ft)	
4	A	Foothill to Fourth	67	1,991	33,300	30	Route (WL 14ft)	
5	AMADOR	Winton to Elmhurst	48	1,051	8,086	25	Route (WL 15ft)	
6	BERRY	Eden Greenway to Whitman	32	800	Not Available	25	Route (WL 15ft)	Requires prohibition of parking
7	CABOT	Winton to Depot	72	5,781	4,600	35	Route (WL 15ft)	
8	CAMPUS	Second to Carlos Bee	45	4,004	11,217	30 and 35	Route (WL 11ft)	The grade of this street is higher than the 5% recommended for not experienced cyclists
9	CARLOS BEE	Mission to Overlook	71	1,716	17,082	35	Route (WL 15ft)	The grade of this street is higher than the 5% recommended for not experienced cyclists
10	CARLOS BEE	Overlook to Hayward	83	1,740	12,036	35	Route (WL 15ft)	The grade of this street is higher than the 5% recommended for not experienced cyclists
11	CHENEY	Peterman to Calaroga	36	358	Not available	25	Route (WL 14ft)	Requires prohibition of parking on one side of the street
12	CITY CENTER DR	Second to Maple-McKeever	48	800	9,354	25	Route (WL 12ft)	
13	CLAWITER	Winton to Middle	72	1,600	16,700	40	Route (WL 15ft)	
14	CLAWITER	Middle to Industrial	72	2,400	16,700	40	Route (WL 15ft)	
15	CLAWITER	Industrial to Depot	49	1,200	16,700	40	Route (WL 15ft)	
16	CLAWITER	Depot to Breakwater Ct.	35	3,400	14,700	35	Route (WL 15ft)	There are two railroad crossings
17	CORSAIR	Winton to Sabre	63	1,212	2,400	25	5ft Lane	
18	CORSAIR	Sabre to End	45	3,772	7,600	25	5ft Lane	
19	D	Grand to Second	60	3,600	11,801	25	4ft Lane	A 4 ft. bike lane is being included in the D St. Widening Proj. No. 5154
20	D	Second to East City Limit	43	3,207	7,500	25	Route (WL 14ft)	
21	DEPOT	Hesperian to City Limit near Ironwood	57	2,724	17,300	25	Route (WL 15ft)	
22	DEPOT	City Limit near Industrial to Industrial	45	300	17,300	25	Route (WL 15ft)	In Alameda Co., there is no sidewalk or curb and gutter
23	DEPOT	Industrial to Clawiter	70	600	17,300	35	Route (WL 15ft)	

TABLE 6

SUMMARY OF *PROPOSED* BIKEWAYS

	STREET NAME	LIMITS	WIDTH FT (Curb to Curb)	LENGTH FT	ADT (Two-way, 24 hr. traffic counts)	SPEED LIMIT (Miles per Hr)	PROPOSED BIKEWAY TYPE (WL=Width of Traffic Lane)	REMARKS
24	DEPOT	Clawiter to Cabot	53	3,850	15,000	35	Route (WL 15ft)	
25	DIXON	Tennyson to Industrial	48	3,590	7,800	25	5ft Lane	
26	E	Second to East	44	990	12,700	25	Route (WL 14ft)	
27	ELDRIGDE	Underwood to Eden Greenway	40	2,950	3,600	25	Route (WL 14ft)	
28	ELMHURST	Amador to Santa Clara	48	1,031	2,950	25	Route (WL 14ft)	
29	FAIRVIEW	Hayward to North City Limit	25	2,900	800	30	Route (WL 12.5ft)	
30	FIFTH	D to E	41	954	2,650	25	Route (WL 15ft)	Requires prohibition of parking on one side of the street
31	FOLSOM	Tampa to Flood Control Channel	48	1,050	2,700	25	5ft Lane	
32	FOLSOM	Flood Control Channel to Huntwood	44	3,285	2,700	25	5ft Lane	Requires prohibition of parking on one side of the street
33	FOURTH	A to B	40	475	3,300	25	Route (WL 15ft)	Requires prohibition of parking
34	FOURTH	B to D	30	930	3,300	25	Route (WL 15ft)	Requires prohibition of parking
35	GADING	Harder to Patrick	72	3,110	12,100	25	5ft Lane	
36	GARIN	Mission to Larrabee	48	1,400	3,190	25	Route (WL 14ft)	
37	GARIN	Larrabee to Clearbrook	25	800	1,424	25	Route (WL 14ft)	Requires prohibition of parking
38	GARIN	Clearbrook to City Limit	26	1,300	1,424	25	Route (WL 14ft)	Requires prohibition of parking
39	GOMER	Underwood to Patrick	45	1,150	508	25	Route (WL 14ft)	
40	GRAND	A to Meek	64	2,750	16,400	35	Route (WL 15ft)	
41	HATHAWAY	A to North City Limit	66	2,400	16,400	25	Route (WL 14ft)	
42	HAYWARD	Parkside to Fairview	26-61	12,900	3,800	30	Route (WL 14ft)	
43	HESPERIAN	Industrial to Catalpa	81	1,255	42,000	35	Route (WL 12ft)	
44	HESPERIAN	La Playa to Skywest	68	4,400	42,000	35	Route (WL 11ft)	
45	HUNTWOOD	Gading to Schafer	61	3,400	14,300	30	5ft Lane	
46	HUNTWOOD	Schafer to Tennyson	48	3,900	13,300	30	5ft Lane	
47	HUNTWOOD	Tennyson to Industrial	48-73	5,500	23,300	30	5ft Lane	
48	HUNTWOOD	Industrial to Whipple	66-73	5,800	24,900	30	5ft Lane	

TABLE 6

SUMMARY OF *PROPOSED* BIKEWAYS

	STREET NAME	LIMITS	WIDTH FT (Curb to Curb)	LENGTH FT	ADT (Two-way, 24 hr. traffic counts)	SPEED LIMIT (Miles per Hr)	PROPOSED BIKEWAY TYPE (WL=Width of Traffic Lane)	REMARKS
49	INDUSTRIAL BOULEVARD	Clawiter to Baumberg	72	9,861	19,100	45	Route (WL 15ft)	
50	INDUSTRIAL PKWY	Existing Bike Path on Flood Control Channel to Mission	73	850	24,163	45	10 ft Path	Bicycle facility on the proposed development on the Fry property (former Hayward Golf Course)
51	INDUSTRIAL PKWY SW	Industrial Blvd to Whipple (City Limit)	55	5,400	17,612	35	Route (WL 15ft)	
52	LA PLAYA	Calaroga to Hesperian	82	1,506	7,600	35	Route (WL 15ft)	
53	MEEK	Grand to Jackson	44	850	4,600	25	Route (WL 14ft)	
54	MIDDLE	Hesperian to Eden	55	2,300	3,700	25	Route (WL 14ft)	
55	MIDDLE	Eden to Clawiter	50	1,400	3,700	25	Route (WL 14ft)	In Alameda Co., there is no sidewalk or curb and gutter, otherwise bike route would be feasible
56	MISSION	Industrial to Fairway	100	3,700	24,700	40	10 ft Path	Bicycle facility on the proposed development on the Fry property (former Hayward Golf Course)
57	ORCHARD	Soto to Joyce	35	1,324	7,604	25	Route (WL 14ft)	Requires prohibition of parking on one side of the street
58	ORCHARD	Joyce to O'neal	73	994	7,604	25	Route (WL 14ft)	
59	ORCHARD	O'neal to Mission	71	506	7,604	25	Route (WL 14ft)	
60	PACHECO	Flood Control Channel to Stratford	48	871	Not available	25	Route (WL 14ft)	
61	PATRICK	Gading to Gomer	73	1,600	13,600	25	5ft Lane	Bike lane would substitue existing Bike Route
62	RUUS	Folsom to Industrial	45	3,696	4,400	25	5ft Lane	
63	SAN LORENZO CREEK	City Center to Northern City Limits	-	3,050	-	-	10 ft Path	Bicycle facility on the Flood Control Channel, per agreement No. A3-3A 423 with the Alameda County Flood Control and Water Conservation District.
64	SECOND	City Center Dr. to E	61	2,814	18,258	25	Route (WL 15ft)	
65	SECOND	E to City Limit (Near Patricia)	37	3,231	17,988	25	Route (WL 15ft)	Requires prohibition of parking
66	SILVA	Jackson to Sycamore	35	1,250	9,200	25	Route (WL 15ft)	Requires prohibition of parking

TABLE 6

SUMMARY OF *PROPOSED* BIKEWAYS

	STREET NAME	LIMITS	WIDTH FT (Curb to Curb)	LENGTH FT	ADT (Two-way, 24 hr. traffic counts)	SPEED LIMIT (Miles per Hr)	PROPOSED BIKEWAY TYPE (WL=Width of Traffic Lane)	REMARKS
67	SIXTH	B to D	37	1,132	744	25	Route (WL 14ft)	Requires prohibition of parking on one side of the street
68	SKYWEST	Golf Course to Hesperian	48-53	4,300	4,000	25	5ft Lane	
69	SOTO	Winton to Jackson	48	1,274	3,300	25	5ft Lane	
70	SOTO	Jackson to Orchard	49	1,427	14,900	25	5ft Lane	
71	SOTO	Orchard to Harder	45	2,887	14,900	25	5ft Lane	Requires prohibition of parking on one side of the street
72	SOUTHLAND DR.	Hesperian to Winton	50	1,250	16,700	35	Route (WL 15ft)	
73	STRATFORD	Industrial Parkway to Pacheco	48	300	Not available	25	Route (WL 15ft)	
74	TAMPA	Patrick to Tennyson	48	2,350	7,400	25	5ft Lane	
75	TAMPA	Tennyson to Folsom	44	2,450	4,800	25	5ft Lane	Requires prohibition of parking on one side of the street
76	TURNER	Calaroga to Hesperian	48	1,700	4,500	25	5ft Lane	
77	UNDERWOOD	Eldridge to Gomer	44	425	3,800	25	Route (WL 14ft)	
78	WESTERN	A to North City Limit along Rail Road Tracks	37	2,100	4,937	25	Route (WL 14ft)	Requires prohibition of parking on one side of the street
79	WHITMAN	Tennyson to Burke	52	377	8,900	25	Route (WL 14ft)	
80	WHITMAN	Burke to near Raymond	48	3,252	8,900	25	Route (WL 14ft)	
81	WHITMAN	Near Raymond to Harder	44	2,506	8,900	25	Route (WL 14ft)	
82	WHITMAN	Harder to Berry	40	2,264	8,900	25	Route (WL 14ft)	Requires prohibition of parking on one side of the street
83	WHITMAN	Berry to Orchard	49	1,200	8,900	25	Route (WL 14ft)	
84	WHITMAN	Orchard to Sycamore	42	1,260	8,900	25	Route (WL 14ft)	Requires prohibition of parking on one side of the street
85	WINTON	Soto to Amador	68	922	23,412	35	Route (WL 15ft)	
86	WINTON	Amador to Santa Clara	73	1,101	28,454	35	Route (WL 15ft)	
87	WINTON	Santa Clara to Southland Pl.	67	2,650	35,454	35	Route (WL 15ft)	
88	WINTON	Clawiter to near Cabot	73	5,957	26,378	35	Route (WL 15ft)	
89	WINTON	Near Cabot to Regional Shoreline	31-37	2,337	7,000	35	Route (WL 15ft)	
	TOTAL LENGTH OF PROPOSED BIKEWAYS = 209,816 FT. = 39.7 MILES							

lane is isolated and does not connect to other bicycle facilities. Completion of these facilities along "A" Street is important to link to other facilities proposed by this bicycle master plan. The description of the proposed bicycle facilities for each segment of "A" Street follows:

Hesperian to I-880:
The widening of this segment of "A" Street started in the fall of 1996 and consists of four vehicular lanes and a raised landscaped median. This project will incorporate two four foot [1.2m] one way bike lanes (Class II). Limited right-of-way made it impossible to install six foot [1.83m] bike lanes to serve B/C bicycle riders. Nevertheless, the proposed bike lane complies with the California minimum standards.

Montgomery to Mission and Mission to Foothill: The desirable bicycle facility would be five foot [1.52m] bike lanes and could be accomplished only if parking on both sides is removed.

The removal of parking is unlikely in the downtown area therefore, the proposed bicycle facility for this segment is a bike route (Class III) and consists of providing a 14 foot [4.27m] wide lane to accommodate bicycles and motorized vehicles.

Foothill to Eastern City Limits near Fourth:
This segment will connect with future bicycle facilities on Redwood Road in the unincorporated area of Alameda County. In the future, it is likely that the County will provide a bike route (Class III), even though six foot [1.83m] bike lanes (Class II) are possible if parking on one side is removed. To provide continuity with County's Plan, the appropriate bicycle facility for the City's segment is a bike route (Class III) and will consist of 14 foot [4.27m] wide lanes to accommodate vehicular and bicycle traffic.

Hesperian to Corsair: The extension of "A" Street from Hesperian Boulevard to Corsair Boulevard has been proposed. This proposed extension would have a 80 foot [24.4m] right-of-way (68 feet [20.7m] curb to curb.) The proposed bicycle facility for this segment is two one-way 5 foot [1.52m] bike lanes that would provide continuity with the new bicycle facility to be installed as part of the "A" Street Widening mentioned earlier.

Amador Street: Providing bicycle facilities on this street would also provide access to the governmental buildings especially the Municipal Court. The proposed bicycle facility is a bike route (Class III) and consists of 15 foot [4.57m] wide lanes.

Cabot Boulevard: This is a wide, north-south street in the Industrial Area linking Winton and Depot. There is enough right-of-way to make bike lanes feasible but, in order to provide continuity with the other proposed bicycle facilities with which it will connect, a bike route (Class III) is being proposed. Because of the high volume of trucks in this area the bike route will consist of 15 foot [4.57m] wide lanes. This route will be used primarily by commuters and, in some instances, by recreational riders heading to the Bay Trail by way of Winton Avenue.

Campus Drive: This street connects Downtown with the California State University at Hayward via Second Street. The grade of this street is higher than the five percent recommended for inexperienced bi-

cyclists. The proposed bicycle facility is a bike route and consists primarily of installing signs. Attention is to be given to signage to warn bicyclists about the steep slope and motor vehicle drivers about the presence of bicyclists.

Carlos Bee Boulevard: This street connects Mission Boulevard with Hayward Boulevard and is one of the access routes to California State University at Hayward. The grade of this street (19% ±) is higher than the 5 percent recommended for inexperienced bicyclists (B/C riders). The proposed bicycle facility is a bike route (Class III) and consists of 15 foot [4.57m] wide curb lanes. Attention is to be given to signage to warn bicyclists about the steep slope.

This bike route will connect the flatlands with the existing bike route on Hayward Boulevard in the hilly area of the City.

Cheney Lane: This street is a residential street connecting Calaroga and the bicycle/pedestrian overcrossing of Highway I-880. Due to inadequate street width, the proposed bicycle facility on this street is a bike route (Class III), and will consist of directional signs only. If this facility were to be signed as a bike route, parking on one side of the street would have to be prohibited in order to provide 14 foot (4.27m) wide lanes.

City Center Drive: The purpose of the proposed bicycle facility is to connect the proposed bike path along the San Lorenzo Creek to Second Street and consequently to the rest of the proposed bicycle network. The proposed bicycle facility is a bike route (Class III) and consists of installing bike route and directional signs.

The implementation of this bike route should be done in conjunction with the construction of the bicycle facility along the San Lorenzo Creek.

Clawiter Road: This arterial serves the Industrial area. There is heavy truck and peak-hour vehicular travel of 16,700 ADT in most segments. The description of the bicycle facilities on Clawiter follows:

Winton to Industrial: The width of the street from curb to curb is a uniform 72 feet [21.9m]. The proposed facility is a bike route (Class III) and consists of signing without any changes to the existing striping. If this facility were to be striped to provide the desirable 15 foot [4.57m] wide curb lanes, the striped median would need to be removed or parking on one side would have to be prohibited.

Industrial to Breakwater: Most of the east side of this segment of Clawiter does not have any kind of improvements (sidewalk, curb and gutter.) Nevertheless, there is enough right-of-way to provide the proposed 15 foot [4.57m] wide curb lanes. There are two railroad track crossings on this segment which should be upgraded to State standards.

Corsair Avenue: This is a collector street serving the Industrial Area. If the "A" Street Extension is implemented, Corsair would be the link with West Winton and the rest of the Industrial Area. Any bicycle facility to be implemented on this street should be done in conjunction with the "A" Street Extension so as not to create an isolated bikeway. This street has two specific segments, as follows:

West Winton to Sabre: This segment is 68 feet [20.7m] wide and has four vehicular lanes with a raised median. The proposed bicycle facility for this segment is two one-way five foot [1.52m] bike lanes (Class II) and will consist of restriping and directional signs.

Sabre to End: This segment is narrower, 45 feet [13.7m] and consists of two vehicular lanes. The proposed bicycle facility for this segment is two one-way five foot [1.52m] bike lanes (Class II). To implement this facility, parking on one side should be prohibited.

"D" Street: This is a collector street that crosses the downtown area. Traffic volumes range from 7,900 to 13,600 ADT. With the widening of the segment from Grand to Winton a four foot [1.22m] bike lane was provided, but this bicycle facility is isolated and does not provide bicyclists with any link to other bicycle facilities. The description of the proposed bicycle facilities follows:

Grand to Second: This segment traverses residential, commercial and the downtown areas. This segment of the street has variable widths and loses continuity at Main Street. Parking is provided along the street. The widening of this segment of "D" Street will start in 1997 and consists of four vehicular lanes and will have continuity at Main and Foothill. This project will incorporate two four foot (1.2m) one way bike lanes (Class II). Limited right-of-way made it impossible to install five foot [1.52m] bike lanes to serve B/C bicycle riders. Nevertheless, the proposed bike lane complies with California minimum standards.

Second to East City Limit: This segment is a collector-type residential street. Incorporation of this segment into the bicycle network would serve two HARD parks (San Felipe and Sulphur Creek) to connect to future county bicycle facilities in Fairview. The City's proposed bicycle facility is a bike route (Class III) and consists of 14 foot [4.27m] wide curb lanes. Bicycle lanes are possible if parking is removed from one side. It is unlikely that this will happen due to the lack of parking space in this older neighborhood.

Depot Road: This is an east-west arterial from Hesperian Boulevard to Cabot Boulevard, linking Hesperian and the Hayward Industrial Area. This is also a main access to Chabot College and Rancho Arroyo Park and Junior High School.

Hesperian to Clawiter: A 300 foot [91.44m] portion of this road is under the jurisdiction of Alameda County and does not have curb, gutter or sidewalk and the pavement is in poor condition. Due to the traffic volume (17,300 ADT) and its use as access tp Chabot College, the desirable bicycle facility is six foot [1.83m] bike lanes (Class II). The bike lanes are possible only in the portion under the City's jurisdiction, and as long as the County's portion is not improved the only bicycle facility possible is a bike route (Class III). If improvements to the County's segment are implemented it is recommended that bike lanes be installed.

Clawiter to Cabot: This portion of Depot Road has heavy truck traffic. The desirable bicycle facility would be six foot [1.83m] bike lanes (Class II). To make this facility possible, parking would have to be removed

from one side of the street.

Removal of on-street parking is unlikely to happen, therefore, the proposed bicycle facility is a bike route and consists of 15 foot [4.57m] wide curb lanes.

Dixon Street: This is a residential street that connects Tennyson and Industrial and also provides access to the South Hayward BART station. The proposed bicycle facility for this street is two one-way five foot [1.52m] bike lanes (Class II).

"E" Street: This is a residential street that also provides access to the Hayward High School. The proposed bicycle facility on this street is a bike route (Class III); and will consist of bike route and directional signs only. This bicycle facility will provide continuity with Alameda County's proposed bike route along East Avenue.

Eldridge Avenue: Eldridge is a residential collector street that connects HARD's Greenway bike path (Class I) to the bicycle/pedestrian overcrossing of Highway I-880. Due to inadequate street width, the proposed bicycle facility on this street is a bike route (Class III) and consists of installing directional signs only. If this facility were to be signed as a bike route, parking on one side of the street would have to be prohibited in order to provide 14 foot [4.27m] wide curb lanes.

Elmhurst Street: This street provides access to the government buildings via Santa Clara Street. The proposed bicycle facility is a bike route (Class III) and consists of installing bike route and directional signs.

Fairview Avenue: This is a narrow street, 25 feet [7.62m] in width, with low vehicular traffic (800 ADT) that connects Hayward Boulevard, California State University, and Mission Boulevard with new developments in the hilly areas (Walpert Ridge, etc.).

The inadequate right-of-way, added to the fact that the grade of this street (15% ±), is higher than the 5 percent recommended for inexperienced bicyclists (B/C riders), precludes providing the recommended 14 foot [4.27m] wide curb lanes. The proposed bicycle facility is a bike route (Class III) that will be more appropriate for experienced bicyclists. Attention is to be given to signage to warn bicyclists about the steep grades. This route will provide continuity with Alameda County's future Bike Route on the same street.

Fault Corridor: The proposed bicycle facility is a bike path (Class I) along the Hayward Fault that parallels Mission Boulevard. It is shown in the Recommended Community Improvements Map of the Mission-Foothills Neighborhood Plan. The alignment shown in the Neighborhood Plan utilizes several park areas and crosses numerous privately owned parcels. This bikeway would connect the existing bike lane (Class II) on Harder Road to Downtown. The proposed bike path (Class I) would consist of a ten foot [3.05m] wide two way paved path. The implementation of this project is beyond the scope of this Bicycle Master Plan because it will require detailed study and identification of environmental, cost and funding issues to determine its feasibility. The location of the bikeway has been shown on the Bicycle Network Plan for future consideration.

Fifth Street: This street is a residential street connecting to Markham Elementary School. Due to inadequate street width, the proposed bicycle facility on this street is a bike route (Class III), and will consist of bike routes and directional signs only. Parking on one side of the street would have to be prohibited in order to provide 15 foot (4.57m) wide lanes.

Folsom Street: This is a residential street, from Tampa Avenue to Huntwood Avenue, with a low volume of vehicular traffic (3,300 ADT). The bicycle facility recommended on this street consists of two one-way five foot [1.52m] bike lanes (Class II). This bicycle facility will connect to the Bike Path (Class I) on the Alameda County Flood Control Channel and to the proposed bicycle facility on Huntwood.

Fourth Street: This street is a north-south residential street on the north-west side of the City. The vehicular traffic on this street is fairly low (3,300 ADT). This is a narrow street (40ft [12.2m] from A Street to B Street and 30ft [9.1m] from B Street to D Street) that would connect A Street with D Street and the hilly areas. The bicycle facility proposed for this street is a Bike Route (Class III) and consists of 14 foot (4.27m) wide curb lanes. Parking on this street would have to be eliminated.

Gading Road: This street and Patrick Avenue form a north-south residential collector linking Harder and Tennyson (12,100 ADT). This corridor also serves several schools, Weekes Park and the City of Hayward Weekes Branch Library. The bicycle facility proposed for this street is two one-way five foot [1.52m] bike lanes. The street will have to be restriped.

Garin Road: The bicycle facility on Garin Road would connect the bike path (Class I) on the proposed development on the Fry property (former Hayward Golf Course) and Garin Regional Park. Garin Road is a narrow roadway, 26 feet (7.9m) wide for more than half of the street. To make a safe connection possible a traffic signal at Garin Road and Mission Boulevard is required. The bicycle facility on Garin Road should not be implemented unless such signal is installed. The proposed bicycle facility is a bike route (Class III). This route would consist of 14 foot [4.27m] wide lanes from Mission Boulevard to the City Limit.

Gomer Street: This is a lightly-traveled (508 ADT), residential street, from Underwood Avenue to Patrick Avenue, connecting the Eldridge-Underwood bike routes (including HARD's greenway and the I-880 overcrossing) with the Gading-Patrick corridor. The proposed bicycle facility is a bike route (Class III) and consists of 14 foot [4.27m] wide lanes.

Grand Street: This is a north-south, four-lane, collector-type roadway connecting major arterials: "A", "D", Winton and Jackson Streets. Providing bicycle facilities on this street would also provide access to the BART station, downtown (library, post office, future City Hall). The desired bicycle facility would be two one-way six foot [1.83m] bike lanes, but this would only be possible if parking were not allowed. Because the removal of parking is unlikely in the downtown area the proposed facility is a bike route (Class III) and consists of restriping the outer lanes to 15 feet [4.57m]

with proper route and directional signage.

Hathaway Avenue: Hathaway is a north-south, four lane, undivided collector type roadway which serves a portion of the unincorporated areas of the County north of "A" Street. The proposed bicycle facility is a bike route (Class III) which would connect with the existing bicycle facilities on Santa Clara Street.

Hayward Boulevard: This is the primary traffic arterial which serves the Hill areas. It is a four-lane, undivided street from Campus to Farm Hill Drive, and a two-lane, undivided street from Farm Hill to Fairview. There is an existing isolated bike route from Campus to Parkside. The proposed bicycle facility for this street is a bike route (Class III) to give continuity to the existing facility. The bikeway will consist of installing bike route and directional signage.

Hesperian Boulevard: This is a major six-lane, divided arterial traversing the City in a north-south direction. This street has the highest traffic volume among the City maintained streets with an average of 42,000 ADT. The street traverses a wide variety of land uses: commercial, residential, a high school, Southland Shopping Center, a large hospital and an airport.

The high volume of traffic and the lack of adequate right-of-way to provide wider curb lanes to accommodate bicycles and motorized vehicles make Hesperian Boulevard undesirable for a bicycle facility.

Due to the directness of this street it is predictable that bicyclists will continue to use it unless alternate routes are provided.

Under these circumstances, the proposed bicycle facility for Hesperian Boulevard is a bike route (Class III) on two segments: Industrial Boulevard to Catalpa Way, La Playa Drive to Skywest Drive.

Northbound on the first segment, directional signs should be installed to direct bicyclists to take the bike lane on Catalpa and then the bike lane on Calaroga to reach Chabot College and Southland Shopping Center. The same should be done southbound on the second segment. Signs should direct bicyclists to turn on La Playa Drive and use the bike lane on Calaroga to reach the southern end of Hesperian Boulevard and signs should direct bicyclists going northbound to use the frontage road on Hesperian to reach "A" Street.

Huntwood Avenue: This is a north-south collector-type street which connects Harder Road and Industrial Parkway. The segment from Gading to Industrial traverses residential areas and its width varies from 48 feet [14.6m] to 66 feet [20.1m]. The segment from Industrial to Whipple is in the business area and its width varies from 66 feet [20.1m] to 73 feet [22.3m]. The proposed bicycle facility for Huntwood is two one-way five foot [1.52m] bike lanes, except in the northbound direction from Folsom Street to Olympic Avenue where improvements to the median need to be done. On this segment, and within the limits mentioned, a Bike Route will be marked and upon the completion of the median improvements five foot [1.52m] bike lanes should be installed.

Industrial Boulevard: Industrial Boulevard is a major, four lane, undivided

arterial from Clawiter Road to Baumberg Avenue. On-street parking is permitted on both sides of the street. The proposed bicycle facility is a bike route (Class III) and will require restriping the street to allow for a 15 foot [4.57m] wide lane next to the parking lane. This bike route will connect at Baumberg Avenue with the existing bike route on Industrial Boulevard that is part of the Bay Trail.

Industrial Parkway: The proposed facility on Industrial Parkway is a bike path [Class I] one segment along the northern boundary of the proposed development on the Fry property (former Hayward Golf Course) and another segment across the same property to connect the existing bike path (Class I) on the Alameda County Flood Control Channel parallel to Industrial Parkway and the proposed bike lane (Class II) on Dixon Street to the bike path (Class I) along the eastern side of Mission Boulevard and the proposed bike route (Class III) on Garin Road. The proposed bike path (Class I) should consist of a ten foot [3.05m] wide two way paved path.

Industrial Parkway Southwest: This is a north-south collector-type street which connects Hayward and Union City. This is a highly traveled street (17,612 ADT). The implementation of a bicycle facility on this street is desirable to provide continuity with the existing bicycle facility on Whipple Road in Union City.

The proposed bicycle facility is a bike route (Class III) and consist of installing bike route and directional signs.

La Playa Drive: Privately maintained street from Calaroga Road to Hesperian Boulevard. The proposed bicycle facility on this street is a bike route (Class III). There is no parking allowed on this street therefore, the street should be restriped to allow for the recommended wide curb lane of 15 feet [4.57m].

Meek Avenue: This is a local residential street from Grand Street to Jackson Street that connects the downtown to the Silva-Sycamore area. Because this street is only 44 feet [13.4m] wide, the proposed bicycle facility is a bike route (Class III).

Middle Lane: A segment of this street is located within the County (Eden Avenue to Clawiter Road) and does not have sidewalk or curb and gutter. The rest of the street (Hesperian Boulevard to Eden Avenue) is located in the City and is a four-lane, undivided local residential street that carries overflow traffic from Winton. Parking is not allowed on this street. The proposed bicycle facility on Middle is a bike route (Class III) and consist of restriping the street to allow for a 14 foot [4.27m] wide curb lane. The segment within the County cannot be implemented as a bike route until the street is improved.

Mission Boulevard: This is a major north-south State roadway, from Industrial Boulevard to Fairway Park, that traverses the City and connects with southern cities (Union City and Fremont). This is a highly traveled street (24,700 ADT). The implementation of bicycle facilities on this street is desirable to provide continuity with Union City.

The proposed bicycle facility is a bike path (Class I) along the eastern boundary of the proposed development on the Fry property

(former Hayward Golf Course). This bicycle facility would connect the proposed bike path (Class I) on Industrial Parkway and the existing bike path (Class I) along the eastern side of Mission Boulevard. The proposed bike path (Class I) should consist of a ten foot [3.05m] wide two way paved path.

Orchard Avenue: This is a residential street, from Soto Road to Mission Boulevard, with fairly high vehicular traffic. This street is utilized by motorists to travel from Harder to Mission and from Jackson to Carlos Bee and the Hayward Hills.

The proposed bicycle facility is a bike route (Class III). To provide adequate space for bicyclists on the segment from Soto Road to Joyce Street on-street parking on one side of the street would have to be prohibited.

Pacheco Way: This street is the main access to the Spanish Ranch Residential Park. The purpose of the proposed bicycle facility is to connect the existing bike path along the Alameda County Flood Control Channel to proposed bicycle facility on Industrial Boulevard via the bike route on Stratford Road.

The proposed bicycle facility is a bike route (Class III) and consists of bike route and directional signs.

Patrick Avenue: This street, from Gading Road to Gomer-Tampa Streets, is part of the Gading-Patrick corridor. There is an existing bike route (Class III) from Gading Road to Tennyson Road. The proposed bicycle facility is two one-way five foot [1.52m] bike lanes (Class II) from Gading to Gomer to replace the existing bike route. The existing bike route from Gomer to Tennyson is to remain.

Ruus Street: This is a residential street, from Folsom Street to Industrial Parkway, with a low volume of vehicular traffic (4,400 ADT). The bicycle facility recommended on this street consists of two one-way five foot [1.52m] bike lanes (Class II). This bicycle facility will connect to the proposed Bike Lane (Class II) on Folsom Street and the proposed bicycle facility on Industrial Parkway.

San Lorenzo Creek: The proposed bicycle facility along the eastern side of the Alameda County Flood Control Channel is a bike path (Class I). This bicycle facility will go from Civic Center Drive north to the City Limit connecting with the proposed bike path as shown on the updated Alameda County Bikeways Plan. The proposed bike path (Class I) consists of a ten foot [3.05m] wide two way paved path.

Second Street: This is a major north-south, highly traveled street (18,000 ADT) in the downtown. Second Street has two different segments as follows:

<u>"A" to "E":</u> This segment of the street has day long (specially during peak hours) heavy turning movements at several intersections ("A", "B" and "E" Streets). Because of this traffic characteristic, the proposed bicycle facility is a bike route (Class III). This street should be restriped to widen the outermost travel lane to allow more room for circulation of motorized vehicles and bicyclists.

<u>"E" to City Limit (Near Patricia):</u> This is a narrow segment, 37 feet [11.3m] in width and the grade of this street (15% ±) is

higher than the five percent recommended for inexperienced bicyclists (B/C riders). This segment of Second Street is utilized by residents of the Hayward Hills and students that travel to California State University via Campus Drive. The proposed bicycle facility is a bike route (Class III). Attention is to be given to signage to warn bicyclists about the steep slope.

Silva Avenue: Silva Avenue is a local residential street which is used by motorists to reach Harder and Tennyson Roads without getting onto congested Jackson Street. This is confirmed by the heavy vehicular traffic circulation here (9,200 ADT).

The proposed bicycle facility is a bike route (Class III) that will require that parking be prohibited to allow enough space to accommodate motorized traffic and bicyclists. This bicycle facility will connect Whitman Street and the downtown BART Station via Grand Street.

Sixth Street: This street is a residential street from B Street to D Street connecting to Markham Elementary School. Due to inadequate street width, the proposed bicycle facility on this street is a bike route (Class III), and will consist of bike route and directional signs only. Parking on one side of the street would have to be prohibited in order to provide 14 foot (4.27m) wide lanes.

Skywest Drive: This street from Golf Course Road to Hesperian Boulevard, provides access to the Hayward Air Terminal and related businesses via Hesperian. The proposed bicycle facility on this street is two one-way five foot [1.52m] bike lanes (Class II). This bicycle facility would link with the future bike lanes on "A" street and Hesperian Boulevard.

Soto Road: This two-lane undivided street, from "D"-Winton Streets to Harder Road, connects Downtown via "D" Street with Jackson Street and Jackson Street with Harder Road. The largest volume of vehicular traffic on this street is from Jackson to Harder with 14,900 ADT compared to 3,300 ADT from "D"/Winton Streets to Jackson Street.

The proposed bicycle facility on this street is two one-way five foot [1.52m] bike lanes (Class II). This facility would link existing bike lanes on "D" and Harder. To implement the bike lanes it is necessary to improve some segments of Soto Road between Orchard and Harder by providing at least curb and gutter; otherwise there is not enough paved area to install the proposed bicycle facility.

Southland Drive: This is a privately maintained street that is used by motorists to bypass congested Winton when traveling to Hesperian Boulevard or Clawiter Road as corroborated by the daily traffic flow of 14,327 ADT. The proposed bicycle facility on this street is a bike route (Class III). There is no parking allowed on this street, therefore, the street should be restriped to allow for the recommended wide curb lane of 15 feet [4.57m].

Stratford Road: The proposed bicycle facility on this street is a short bike route (Class III) whose purpose is to connect the existing bike path along the Alameda County Flood Control Channel to the existing bicycle facility on Industrial Boulevard via the proposed bike route on Pacheco Way. The proposed bicycle facility consists

of installing bike route and directional signs.

Tampa Avenue: This street, from Patrick Avenue to Folsom Street, provides access to Weekes Park and the Weekes Branch Library. To maintain continuity, the proposed bicycle facility is two one-way five foot [1.52m] bike lanes. By striping the street it is possible to implement this facility from Patrick Avenue to Tennyson Road. For the segment from Tennyson Road to Folsom Street, parking would have to be prohibited on one side of the street. If the removal of parking is not possible, the bicycle facility should be changed to a bike route (Class III).

Turner Court: This is a residential street, from Calaroga Avenue to Hesperian Boulevard, with a low volume of vehicular traffic (4,500 ADT) and a Bus Route. The bicycle facility recommended on this street consists of two one-way five foot [1.52m] bike lanes (Class II). This bicycle facility will connect the bike lane (Class II) on Calaroga Avenue to Chabot College Campus.

Underwood Avenue: This is a north-south residential collector-type street, from Eldridge Avenue to Gomer Street, that parallels the Gading-Patrick corridor. The proposed bicycle facility on this segment of Underwood Avenue is a bike route (Class III) and will consist of installing bike route and directional signage. This facility will be utilized as part of the bikeway connecting the Gading-Patrick corridor with the overcrossing of Highway I-880.

Western Boulevard: This is a north-south collector street, from "A" Street to the west City limit, which parallels the Western Pacific Railroad tracks. The proposed bicycle facility on this street is a 14 foot [4.27m] wide bike route (Class III). To implement this route, parking would have to be eliminated on the east side of the street. Bike route and no parking signs would have to be installed. This bicycle facility will provide continuity to the proposed bike route on Grand and will connect with future County bicycle facilities at the north city limit.

Whitman Street: This is a north-south residential, collector-type street, from Orchard Avenue to Tennyson Road, located west of the Union Pacific Railroad tracks. This street is used by motorists to reach Harder Road and Tennyson Road from Jackson Street. The proposed bicycle facility on Whitman Street is a bike route (Class III) with 14 foot [4.27m] wide curb lane. From Harder road to Berry Avenue, parking should be prohibited on the east side of the street and no parking signs should be installed at the same time as the bike route signage.

Winton Avenue: This street is a major east-west arterial which provides the primary access to the County governmental complex center, Southland Shopping Center and the Hayward Industrial Area. In addition, Winton Avenue is one of the few streets that crosses the I-880 freeway. This street is one of the busiest in the City. Traffic volumes vary from 23,412 ADT to 35,454 ADT. In consideration of the heavy traffic volumes and congestion an alternate route for bicycle facilities would be preferable. There are no other roadways that provide the directness of Winton, therefore, it is predictable that this street will continue to be used by bicyclists. A description

of the bicycle facilities follows:

"D"-Soto to Santa Clara: This section is a four-lane street. The proposed bicycle facility for this segment is a bike route (Class III). The implementation of this facility will consist of installing bike route signage.

Santa Clara to Southland: The main characteristic of this segment is that it traverses a major interchange of the I-880 freeway. This segment has one of the highest traffic volumes in the City. In addition, motorized vehicles merge from the freeway ramps and weave into left-turn lanes to the Southland Shopping Center. It is recommended that in this segment signs warning motorists of the presence of bicyclists be installed.

Clawiter to the Regional Shoreline: This segment is a four-lane, undivided roadway which travels through industrial land uses. Traffic volumes range from 7,000 ADT (from Cabot Boulevard to the end) to 26,378 ADT (from Clawiter Road to Cabot Boulevard). The proposed bicycle facility is a bike route (Class III). The implementation of this route will consist of installing bike route and directional signage and the replacement of any unsafe inlet grates.

5.1.2 Supplemental Bicycle Facilities:

Sometimes people are discouraged from riding their bikes to locations where bicycle parking is not available. Providing bicycle parking facilities is an essential element in an overall effort to promote bicycling.

Parking is needed at locations such as employment centers, public transportation stations, shopping centers, libraries, recreation facilities, post office, and schools. Parking facilities should be located near building entrances or other highly visible areas. Bicycle parking should be designed so that it will not damage bicycles. If bicycle parking is not properly designed and located, bicyclists will use trees, railings or other structures.

As mentioned earlier in this document in 1994 the City of Hayward developed a transportation survey for all large employers (100 employees or more). The transportation survey process was required at that time by the Trip Reduction Ordinance (TRO) of the City of Hayward, the Alameda County Congestion Management Agency (CMA) and the Bay Area Air Quality Management District (BAAQMD). Besides requiring the employers to participate in an annual survey process, the TRO required the employers to develop and implement a trip reduction program. Some potential measures identified for inclusion in a trip reduction program were: 1) providing weather protected and secure bicycle storage within the building or in racks/lockers and 2) the installation of showers, lockers, or changing facilities.

The large employers were required to complete and submit an Employer Trip Reduction Program Report to ensure compliance with the TRO. Unfortunately the implementation of some of the measures was seen by many employers as burdensome, costly and an example of one more governmental regulation to contend with rather than a means to improve air quality and reduce congestion.

Figure 13 shows the status of bicycle parking and locker/shower facilities at

DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION

BICYCLE MASTER PLAN

SUPPLEMENTAL BICYCLE FACILITIES

AT MAIN DESTINATIONS AND MAJOR EMPLOYERS

		BICYCLE PARKING		LOCKERS/ SHOWERS	
		Y	N	Y	N
	TRANSPORTATION				
T1	DOWNTOWN BART STATION	X			
T2	SOUTH HAYWARD BART STATION	X			
T3	RAIL STATION (AMTRAK)	X			
T4	SAM TRANS	X			
	GOVERNMENT			NOT APPLICABLE	NOT APPLICABLE
G1	CITY CENTER (1998)	X			
G2	CITY HALL (TEMPORARY)	X			
G3	CENTENNIAL HALL	X			
G4	POLICE DEPARTMENT	X			
G5	MAIN POST OFFICE		X		
G6	ALAMEDA COUNTY OFFICES		X		
G7	MUNICIPAL COURT		X		
G8	HAYWARD LIBRARY MAIN	X			
G9	HAYWARD LIBRARY BRANCH	X			
G10	CHABOT COLLEGE	X			
G11	CALIFORNIA STATE UNIVERSITY	X			
G12	HAYWARD HIGH SCHOOL	X			
G13	TENNYSON HIGH SCHOOL	X			
G14	MT EDEN HIGH SCHOOL	X			
	RECREATION				
R1	GARIN REGIONAL PARK	X			
R2	EAST AVENUE PARK	X			
R3	SHORELINE INTERP. CENTER		X		
R4	HAYWARD MEMORIAL PARK	X			
	LARGE EMPLOYERS				
E1	AC TRANSIT	X		X	
E2	ALAMEDA COUNTY	X			X
E3	ALAMEDA NEWSPAPER GROUP	X			X
E4	ANCHOR GLASS CONTAINERS				
E5	BAY CITIES AUTO AUCTION	X			X
E6	BAY VALLEY MEDICAL GROUP	X		X	
E7	CALIFORNIA STATE UNIVERSITY	X			X
E8	CALIFORNIA STATE AUTO ASSOC		X		X
E9	CHABOT COLLEGE	X		X	
E10	CITY HALL (TEMPORARY)	X			X
E11	CITY HALL (1998)	X		X	
E12	POLICE DEPARTMENT	X		X	
E13	MACYS	X			X
E14	ETEC SYSTEMS	X		X	
E15	FRIDEN NEOPOST	X		X	
E16	GILLIG CORPORATION		X		X
E17	INJEX INDUSTRIES	X			X
E18	INTERNATIONAL WINDOW	X			X
E19	J.C. PENNEY	X			X
E20	KAISER PERMANENTE	X		X	
E21	KOBE PRECISION	X		X	
E22	MDC VACUUM PRODUCTS	X		X	
E23	MERVYNS		X		X
E24	OMI OF CALIFORNIA		X		X
E25	PG&E	X		X	
E26	PACIFIC BELL		X		X
E27	PEPSI CO	X		X	
E28	SEARS & ROEBUCK	X			X
E29	SHAKLEE U.S	X		X	
E30	SHASTA BEVERAGES		X		X
E31	ST. ROSE HOSPITAL		X		X
E32	TCI OF CALIFORNIA		X		X
E33	UNITED CAN	X			X
E34	WARDEN WEST		X		X
E35	WORLD WIDE TRADING CO	X			X
E36	BAXTER HOSPITAL CORP	X			X
E37	DAVIS WIRE COMPANY		X	X	

FIGURE 13

transportation, government, recreation and large employers sites. It is recommended that the City continue communication with the large employers that have not yet implemented the above measures. The City should install or improve existing bicycle parking facilities at important public destinations such as, the new City Center and libraries. The City should also coordinate with the Hayward Area Recreation District (HARD) and with the Hayward Unified School District to install or improve existing bicycle facilities at public parks and public schools respectively.

In addition to bicycle parking and locker/shower facilities, there are several other improvements that complement bikeways. Provisions should be considered for interfacing bicycle riding with public transportation, such as racks on buses or allowing bicycles aboard BART.

Most AC Transit buses are not equipped with racks. AC Transit has ordered three hundred new buses equipped with bicycle racks. The cities and bus lines to be serviced by the new buses are to be determined at a later date. However, AC Transit is pursuing funding to install bicycle racks in all existing buses already in circulation. It is recommended that the City coordinates with AC Transit so some of the buses equipped with bicycle racks be assigned for circulation in the City of Hayward especially on routes serving Chabot College and the University of California at Hayward.

Bicycles are allowed to be transported in the BART trains during the weekends with no schedule restrictions. During weekdays bicycles are not allowed between 6:30 am and 9:00 am and between 3:30 pm to 6:30 pm. These restrictions during peak hours may discourage persons from commuting by bicycle. Efforts should be pursued to find a procedure to accommodate bicycle commuters during peak hours, perhaps permitting bicycles just in the last car of each train.

5.2 DESIGN GUIDELINES

Guidelines are presented in the following section to help design and construct roadway improvements and separate bike paths. If possible, the recommended City Standards should be followed, but the State of California Minimum Standards for Bikeways should be strictly followed.

The California Department of Transportation (Caltrans), was a pioneer in developing bicycle planning guidelines and design standards. Their 1978 publication, entitled *Planning and Design Criteria for Bikeways* in California, was the basis for the 1981 *Guide for the Development of Bicycle Facilities*, published by the American Association of State Highway and Transportation Officials (AASHTO)[1].

Caltrans has since published *Highway Design Manual, Chapter 1000: Bikeway Planning and Design,* which is consistent with the AASHTO document. This California manual differentiates mandatory standards from advisory standards by listing each in separate tables at the beginning of the publication and setting mandatory standards in bold type within the text. Discussions are

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[1] Since 1981, the *Guide for the Development of Bicycle Facilities* has been the basic reference document for bicycle facility planners and designers across the country. It has been adopted in its entirety, or with minor changes, and forms the basis of many states facility standards.

based upon street system and Class I, II, and III bikeways.

Under California law, bicycles are considered vehicles and as such they have the right to use all roadway facilities. The bicycle corridors identified earlier in this document are assumed to be used more often by bicyclists. Hayward should at least insure that City streets meet minimal standards to provide a safe environment for bicycle riders.

The bicycle facilities in Hayward should conform to the following standards:

5.2.1 Bike Paths (Class I):

Bike paths are dedicated bikeways on which no automobile traffic is allowed. Special care must be taken in the design to insure that there are no conflicts with automobile crossing. Bike paths are illustrated in Figure 14 and should have the following characteristics.

- Total minimum width of eight feet [2.44m], 12 feet [3.66m] desirable, allowing at least four feet [1.22m] in each direction of travel. Physical separation from any parallel automobile traffic is desirable to avoid conflicts with traffic at intersections and driveways. Separation from pedestrian traffic is also theoretically desirable; however, since bike paths in practice usually attract pedestrians, a 12-foot bike path is desirable. Twelve feet [3.66m] is also desirable because of the size of maintenance vehicles. The edges of bike paths tend to get cracked by maintenance vehicles if they are narrower than 12 feet [3.66m].

- Relatively straight alignment, with good visibility and smooth turning radii for bicyclists.

- Bike paths should have directional signs and signs to furnish additional information such as distances and destination, similar to those for bike routes illustrated in Figure 19.

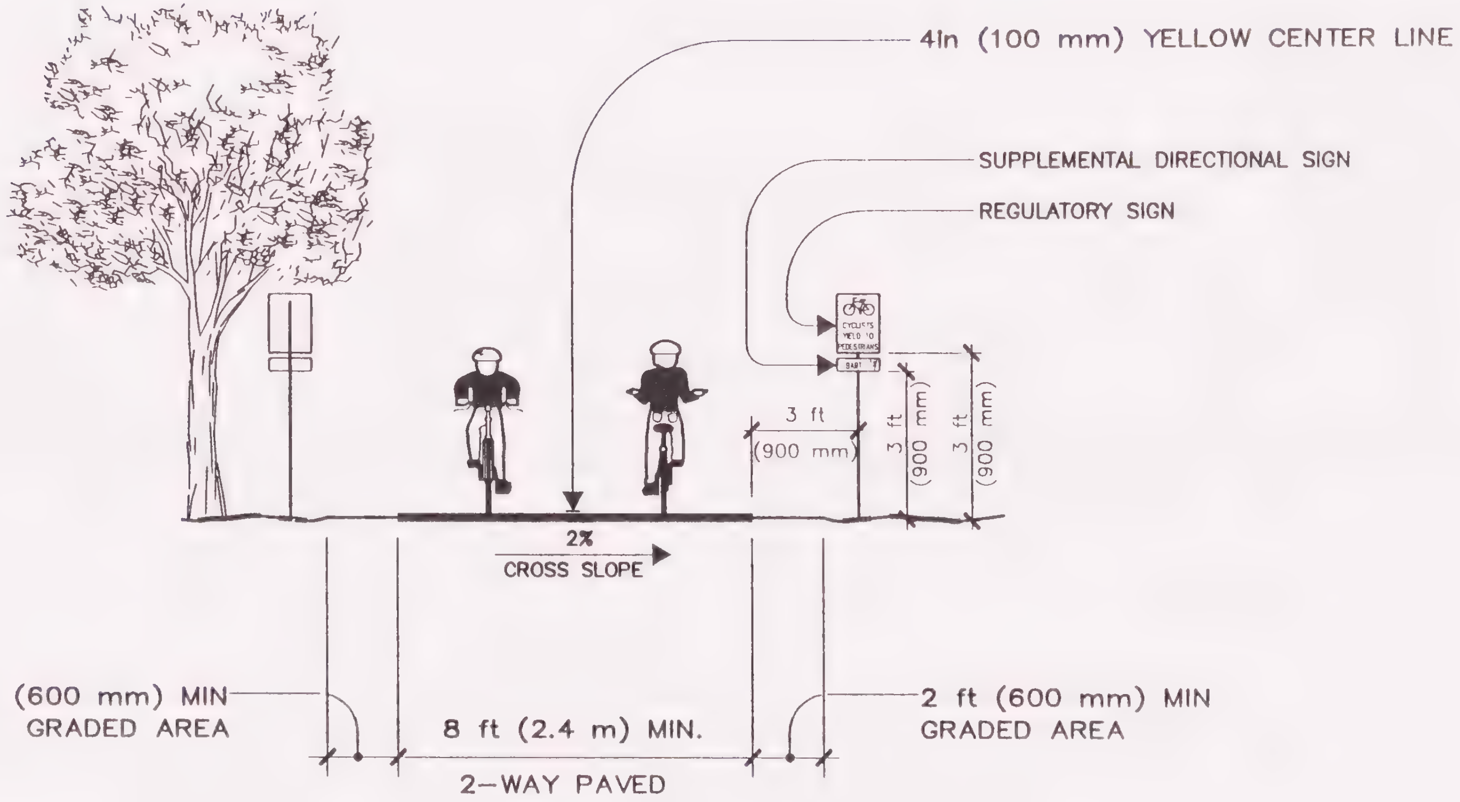
5.2.2 Bike Lanes (Class II):

Bike lanes are marked lanes for bicycles on local, collector and major (arterial) streets. They are appropriate for streets with moderate traffic that are designated bike routes.

Bike lanes are also appropriate on streets with light, but relatively fast auto traffic (especially streets with wide auto lanes; the addition of bike lanes will narrow the auto lanes, potentially helping to encourage slower auto traffic). Bike lanes are illustrated on Figure 15 and they should have the following characteristics:

- Minimum width of five feet [1.52m], more is preferred (see Table 6 for actual width). In any case the bike lane should not be more than eight feet [2.44m], because motorists could mistake it for an auto lane.

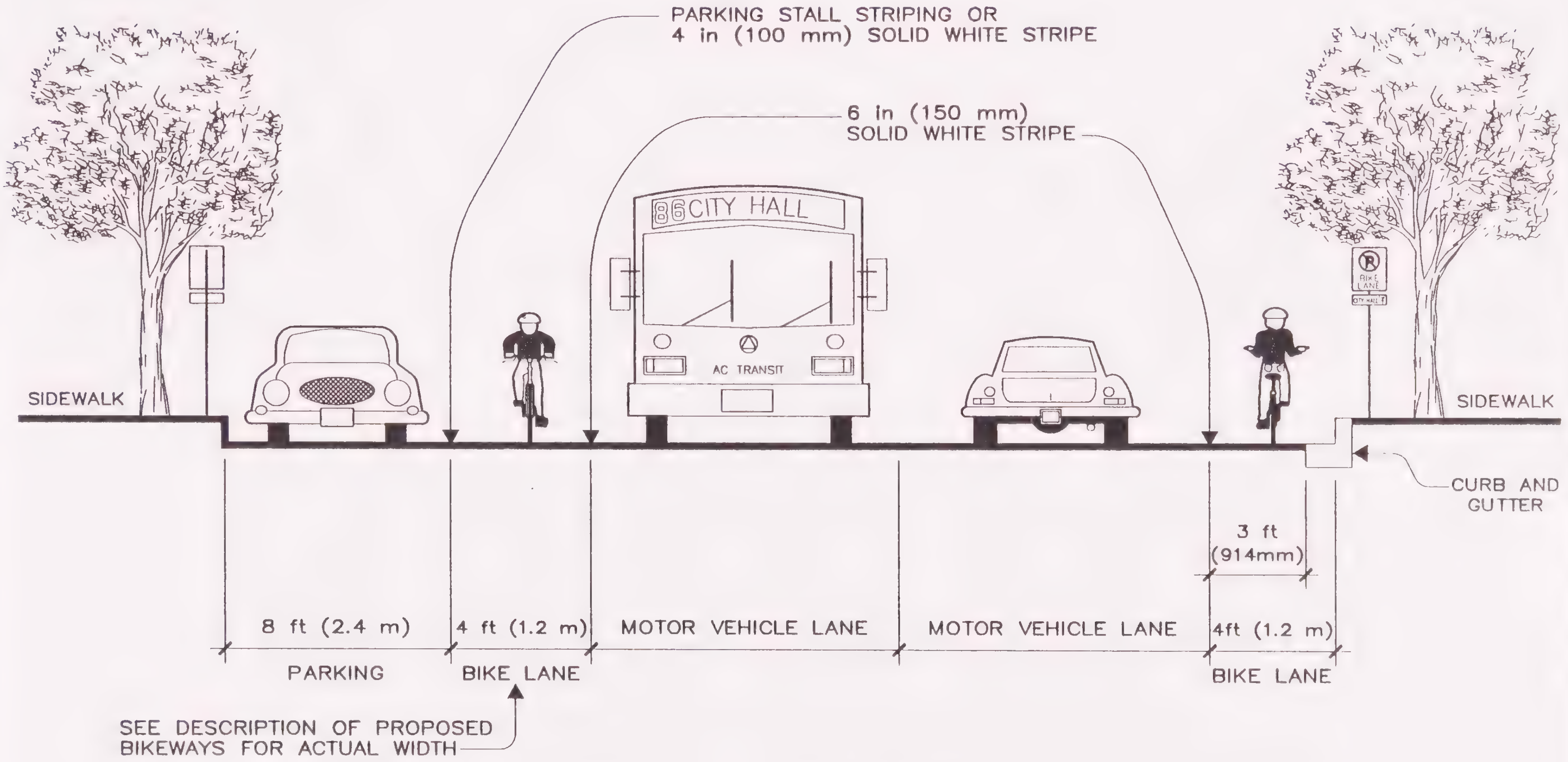
- The width of the bike lane in each direction should be measured from the curb where no parking is allowed, with at least four feet [1.22m] from the edge of the gutter. Where parking is allowed, the delineated area should be at least 13 feet [3.96m] wide and ideally 14 feet [4.27m] to accommodate eight feet [2.44m] of parking and the bike lane. Clearly painted stripe and markings delineating the bike lane.



BIKE PATH (CLASS I)

FIGURE 14

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION
BICYCLE MASTER PLAN



BIKE LANE (CLASS II)

FIGURE 15

NOTE: ALL DIMENSIONS SHOWN
ARE THE MINIMUM RECOMMENDED

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION
BICYCLE MASTER PLAN

- Bike lanes should always be one-way and flow in the same direction as motor vehicles.

- Where it is necessary to reduce the width of motor vehicle lanes to 11 feet [3m] in order to stripe bike lanes, consideration should be given to the minimum design standards such as motor vehicle speeds, truck volume, etc.

- Raised barriers (e.g. asphalt concrete dikes) or raised pavement markers should not be used to delinate bike lanes.

- Bike lanes complicate both bicycle and motor vehicle turning movements at intersections. Figure 16 illustrates these movements and when a right-turn only lane exists at an intersection, the guidelines for striping and signing shown on Figure 17 should be followed.

- Bike Lanes should be supplemented with directional signs and signs to furnish additional information such as distances and destinations similar to the ones for Bike Routes illustrated in Figure 19.

5.2.3 Bike Routes (Class III):

Bike routes have signs but no stripes delineating bike lanes. Bike routes are useful to guide bicyclists when they are presented with a series of parallel residential streets, where only some are through streets or some have better crossings of the cross streets. Bike routes signs can be enhanced with supplemental signs indicating destinations served by the route. Bike route sections are illustrated on Figure 18 and they should have the following characteristics:

- A right lane wider than 12 feet [3.66m] can better accommodate both bicycles and motor vehicles in the same lane. In many cases where there is a wide lane, motorists will not need to change lanes to pass bicyclist. A lane with a minimum width of 14 feet [4.27m] and a maximum width of 16 feet [4.8m] is desirable. For widths larger than 16 feet [4.8m], the bike lane should be striped, because a greater width can encourage the undesirable operation of two motorized vehicles in one lane.

- Restriping to provide wide curb lanes can be accomplished by making the remaining travel lanes and left-turn lanes narrower. This should be performed after careful review of the minimum design standards for the roadway.

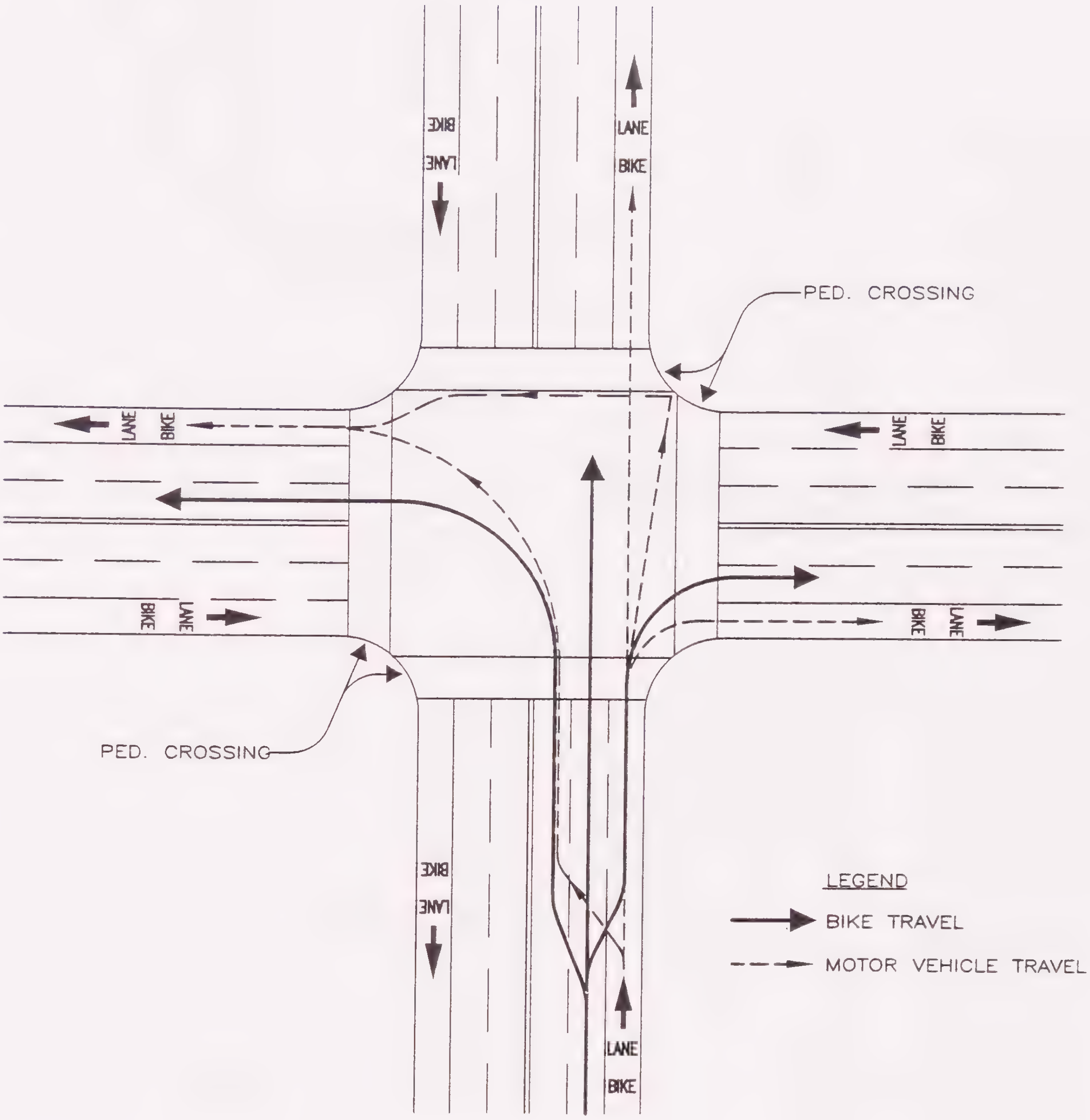
- Route signs along the street at intervals of approximately 500 feet [152.4m] and whenever the route requires a change in direction. Bike route signs should be supplemented with directional signs and additional informational signage such as distances and destination (Figure 19).

- Where the right lane is less than the recommended 14 feet [4.27m], special warning signs such as, “Share the Road”, “Bicycles allowed use of full curb lane” and “Change lanes to pass bicyclists” should be installed.

-

5.2.4 Drainage Grates:

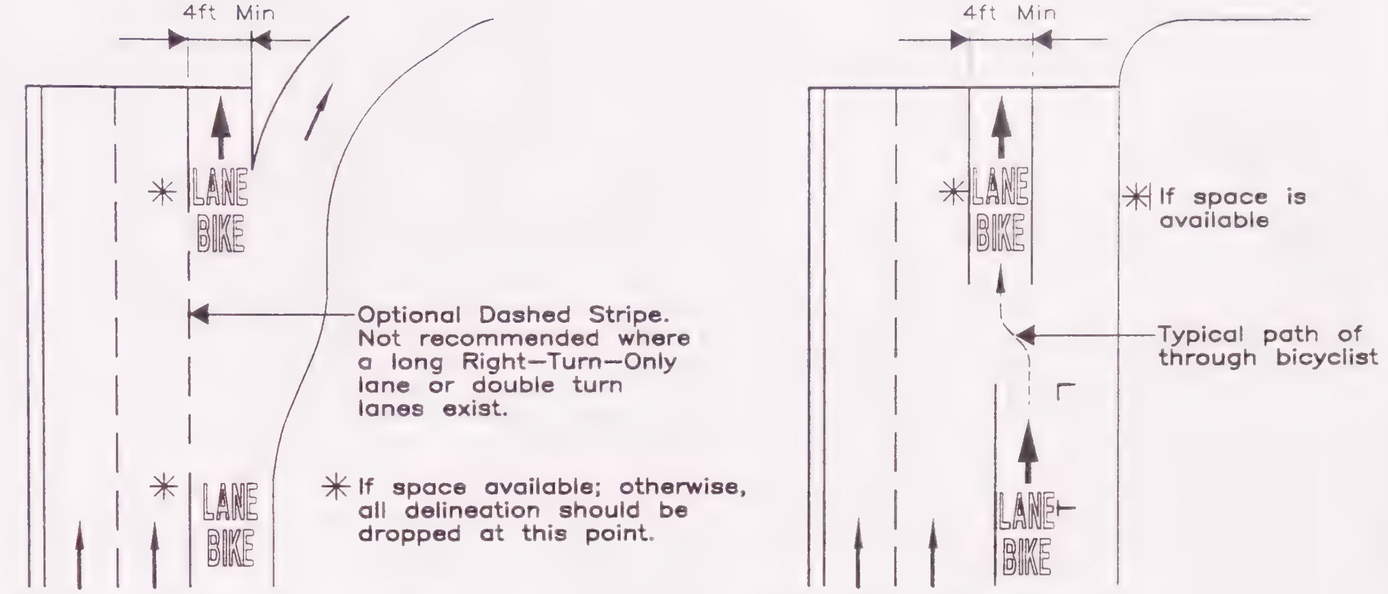
Drainage grate inlets are potential problems



TYPICAL BICYCLE/AUTO MOVEMENTS AT INTERSECTIONS OF MULTILANE STREETS

FIGURE 16

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION
BICYCLE MASTER PLAN



Optional Dashed Stripe. Not recommended where a long Right–Turn–Only lane or double turn lanes exist.

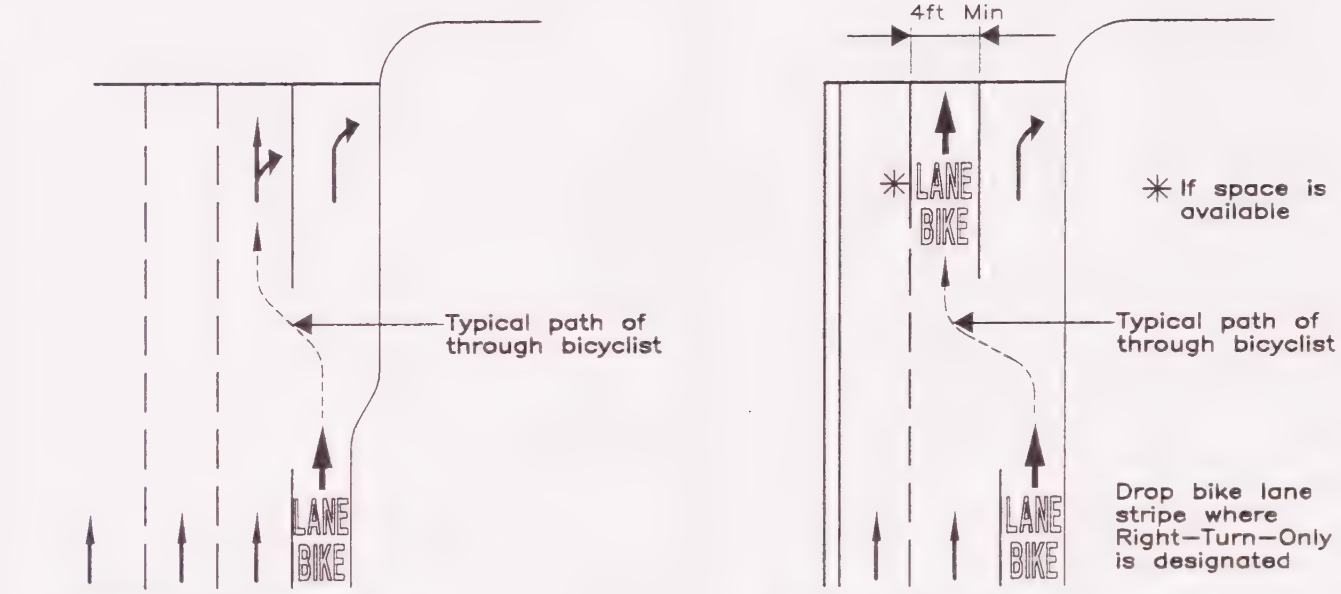
* If space available; otherwise, all delineation should be dropped at this point.

* If space is available

Typical path of through bicyclist

RIGHT–TURN–ONLY LANE

PARKING AREA BECOMES RIGHT–TURN–ONLY LANE



Typical path of through bicyclist

* If space is available

Typical path of through bicyclist

Drop bike lane stripe where Right–Turn–Only is designated

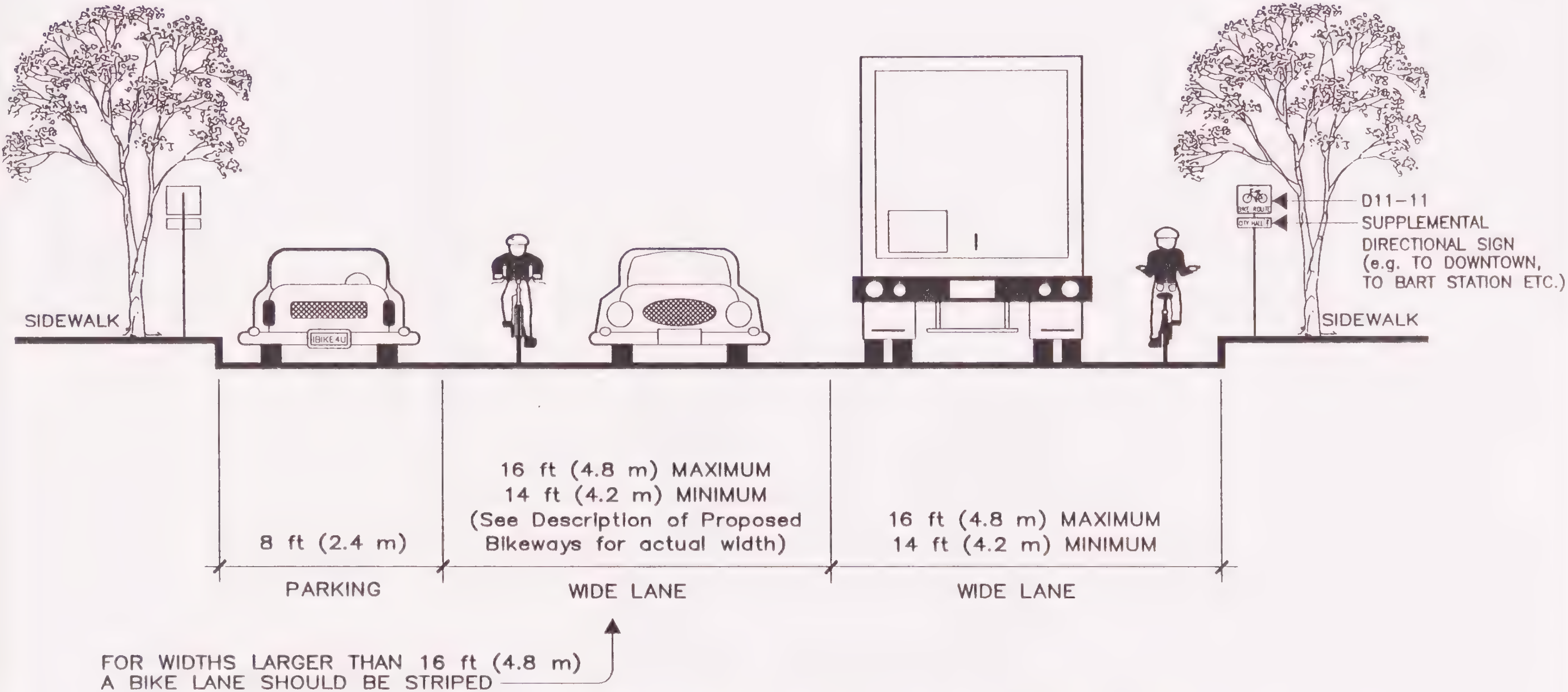
OPTIONAL DOUBLE RIGHT–TURN–ONLY LANE

RIGHT LANE BECOMES RIGHT–TURN–ONLY LANE

BIKE LANES AT RIGHT–TURN–ONLY LANES

FIGURE 17

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION
BICYCLE MASTER PLAN



BIKE ROUTE (CLASS III)

FIGURE 18

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
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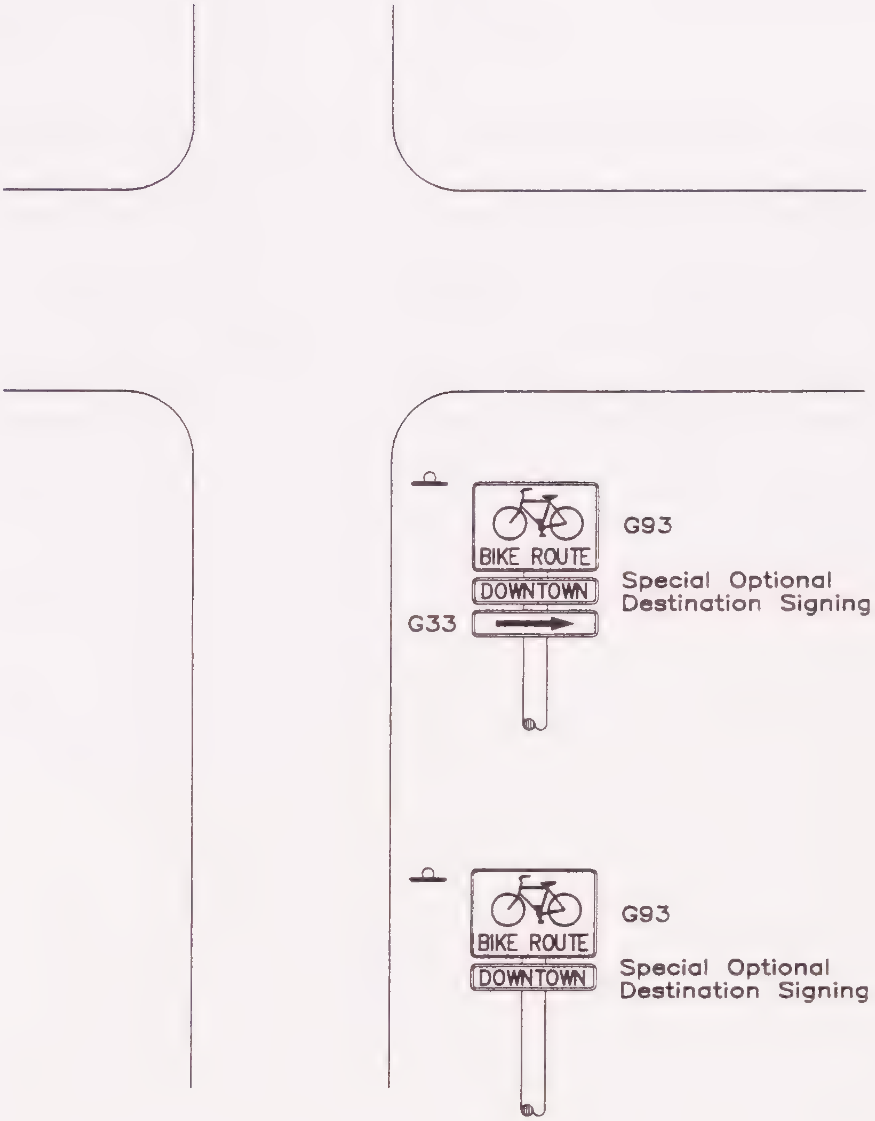
BICYCLE MASTER PLAN



NOTE:
THE G93 BIKE ROUTE SIGNS SHALL BE PLACED AT ALL POINTS WHERE THE ROUTE CHANGES DIRECTION AND PERIODICALLY AS NECESSARY

BIKE ROUTE SIGNING

FIGURE 19

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION
BICYCLE MASTER PLAN

to bicyclists. Curb opening inlets are desirable to completely eliminate exposure of bicyclists to grate inlets.

On new construction where bicyclists will be riding next to the curb, bicycle-safe drainage grate inlets should be installed.

In existing roads where bicyclists will be riding next to the curb, unsafe drainage grate inlets should be replaced with bicycle-safe and hydraulically efficient ones.

It is important that grates be adjusted flush with the pavement surface when the roadway is resurfaced.

5.2.5 Railroad Crossings:

Railroad-highway grade crossings should ideally be at right angles to the rails. If the crossing angle is less than approximately 45 degrees, consideration should be given to widening the outside lane or bicycle lane to allow bicyclists adequate room to cross the tracks at a right angle.

6

IMPLEMENTATION

6.1 Recommended Actions:

If adopted and implemented, a variety of possible actions could be expected to achieve the objectives and accomplish the goals of the bicycle plan.

FACILITY DESIGN - Streets, Bikeways and Parking:

GOALS:

1. To provide bicycle routing that is an integral part of street design so that bikeways form an integrated network.

2. To coordinate and cooperate with surrounding jurisdictions to create a bikeway network.

3. To promote intermodal transportation.

4. To provide necessary support facilities, such as bicycle parking, and adequate protection and security for bicycles.

5. To maintain roadways and bicycle related facilities so they provide safe and comfortable conditions for the bicycle rider.

Strategy 1: Upgrade existing designated bicycle facilities to meet minimum standards.

Action:

a) Adopt a policy supporting the bicycle master plan and the recommended standards.

Strategy 2: Assure that new improvements consider various bicycle alternatives and develop a list of priorities for maintenance of existing bicycle facilities.

Actions:

a) Review all new roadway design projects and proposed private developments to assure that bicycle facilities are adequately considered.

b) For each neighborhood establish a list of routes needed to provide access to schools, shopping, recreation and other

purposes.

c) Continue the Pavement Management Program to systematically inventory all street sections.

d) Identify the suitability of each of these facilities for bicycle usage.

Strategy 3: Develop a procedure for routine inspection and maintenance of bicycle facilities.

Actions:

a) Incorporate the review, inspection and maintenance of the bike facilities, including drainage grates, with other routine maintenance programs.

b) Provide a telephone contact for bicyclists to report maintenance deficiencies, including spot repair.

Strategy 4: Provide bicycle security racks and other accommodations at all major trip generators.

Actions:

a) Contact major businesses and employers to encourage provision of secure bicycle parking.

b) Encourage development of bicycle parking at convenient locations.

c) Disseminate information on available bicycle parking racks.

ENFORCEMENT

Goal 1: To improve bicycle riding for bicyclists.

Strategy 1: To improve bicycle riding behavior of bicyclists and reduce bicycle accidents.

Strategy 2: To train police personnel on the importance of promoting more enforcement of traffic laws relating to bicycles.

Actions:

a) Establish local programs which promote safe bicycling riding.

b) Continue conducting the awareness program aimed at the rationale for and importance of bicycle laws and regulations enforcement.

EDUCATION

Goal 1: To create awareness in bicyclists and motorists to share the road safely and efficiently.

Strategy 1: To improve bike-related skills and knowledge.

Actions:

a) Ask the Finance Department to include a flyer in their monthly bills on the rights and responsibilities of bicyclists.

b) Ask the AC Transit to include bicycle safety ads on the backs of their buses.

c) Enlist the support of the Daily Review to run editorials on the bicycle program and the importance of people learning to share the road.

Strategy 2: To insure that all public information materials are current with the best available knowledge.

Actions:

a) Work with local service organizations to modify bicycle rodeos to include on-bike training in traffic-related skills such as scanning, lane positioning, left turns, etc.

b) Make information available to Hayward households to acquaint them with the types of accidents which involve young bicyclists, and give them ideas on what preventive steps they can take Develop an information pamphlet on safety concerns for bicyclists to be distributed to students, parents and the public in general.

ENCOURAGEMENT:

Goal 1: To promote the increased use of bicycles for all purposes, but especially for commuting to work..

Strategy 1: To promote public awareness and acceptance of bicycling.

Actions:

a) Continue public endorsements of bicycling and/or special bicycling events such as bike-to-work day.

b) Develop and distribute pamphlets outlining the benefits of bicycling.

c) Develop and print maps for bicyclists.

d) Provide information on how to select and maintain a bicycle.

Strategy 2: To create opportunities for new bicyclists to have a positive bicycling experience.

Actions:

a) Work with local service groups to develop bicycle tours of historic sites, buildings, etc.

b) Work with local employers to provide bicycle parking facilities, bicycle trip reimbursement, showers and bicycle lockers.

6.2 Prioritization and Schedule:

The implementation consists primarily of a prioritized plan for constructing the recommended bikeway projects and work on existing bikeways to correct existing deficiencies.

6.2.1 Costs Estimates:

The estimated costs of constructing the new bikeways and maintaining the existing ones are listed in Table 7.

Table 7
Bikeway Unit Cost Summary

Item	Estimated Cost* Mile	Estimated Cost* Kilometer
1. Construction Costs		
A. Bike Path (Class I)		
New construction 8ft [2.44m] wide	$95,000	$60,000
New construction 12ft [3.66m] wide	$145,000	$91,000
B. Bike Lane (Class II)		
Signing, striping, grates, and pavement markings only	$9,960	$6,225
C. Bike Route (Class III)		
Signing (Bike Route and Directional) and grates only	$3,590	$2,244
2. Signing		
Typical Bike Route or Bike Lane sign	$150 each	
Typical Directional sign	$100 each	
3. Pavement Marking		
Lines 6in [15mm]	$0.40 lf	$1.21m
Bike Picture Stencil	$100 each	
Bike Lane Stencil	$100 each	

* Excludes additional design and right-of-way required

The estimated costs are based on past experience in constructing similar bikeways and these are considered "planning-level" estimates only.

Total project cost includes only the baseline construction for the bikeway and does not include any major street improvements (e.g. curb and gutter on Soto Road) which are not included in the estimates. In addition to the unit cost estimates, a percentage for engineering, administration and inspection should be added.

6.2.2 Prioritization Criteria:

The projects are prioritized depending on the following factors:

1. The bikeway will encourage the use of the bicycle as a means of transportation to work.
2. The bikeway will serve neighborhoods with a higher percentage of low income households.
3. Available funding.

6.2.3 Prioritization of Projects:

The new projects are prioritized according to the criteria described above, divided into phases and presented in Tables 8 through 14 and in Figure 20.

6.2.4 Schedule:

Projects should be constructed based on the following schedule:

A. **Phases 1 and 2** should be implemented by the year 1998: **$81,700**

B. **Phases 3 and 4** should be implemented by the year 1999 **$71,900**

C. **Phases 5 and 6** should be implemented by the year 2000 **$74,600**

D. **Phases 7** should be implemented after the year 2000 as funding becomes available **$92,700**

If funding becomes available at an earlier date, the timing of subsequent years should be adjusted accordingly.

TABLE 8

PHASE 1 - PROPOSED BIKEWAYS

	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
1	AMADOR	Winton to Elmhurst	Route	$ 900	
2	CABOT	Winton to Depot	Route	$ 4,400	
3	CLAWITER	Winton to Industrial	Route	$ 3,000	
4	CLAWITER	Industrial to Breakwater	Route	$ 3,500	Railroad crossing costs are not included in the estimates
5	DEPOT	Hesperian to Cabot	Route	$ 5,600	
6	ELMHURST	Amador to Santa Clara	Route	$ 900	
7	HESPERIAN	Industrial to Catalpa	Route	$ 600	
8	INDUSTRIAL	Clawiter to Baumberg	Route	$ 8,000	
9	MIDDLE	Hesperian to Clawiter	Route	$ 4,700	
10	SOUTHLAND DR.	Hesperian to Winton	Route	$ 2,400	
11	WINTON	Soto to Southland Drive	Route	$ 3,000	
12	WINTON	Clawiter to Regional Shoreline	Route	$ 6,200	
		Total		$ 43,200	

TABLE 9

	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
		PHASE 2 - PROPOSED BIKEWAYS			
1	HUNTWOOD	Gading to Whipple	Lane	$ 38,500	
		Total		$ 38,500	

TABLE 10

	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
		PHASE 3 - PROPOSED BIKEWAYS			
1	CHENEY	Peterman to Calaroga	Route	$ 300	
2	ELDRIGDE	Underwood to Eden Greenway	Route	$ 2,200	
3	FOLSOM	Tampa to Huntwood	Lane	$ 9,000	
4	GADING	Harder to Patrick	Lane	$ 6,500	
5	GOMER	Underwood to Patrick	Route	$ 900	
6	INDUSTRIAL PARKWAY SW	Industrial Blvd to Whipple	Route	$ 4,100	
7	PACHECO	ACFC to Stratfor	Route	$ 700	
8	PATRICK	Gading to Gomer-Tampa	Lane	$ 3,400	Bike lane would replace existing bike route
9	RUUS	Folsom to Industrial	Lane	$ 6,300	
10	STRATFORD	Industrial Blvd to Pacheco	Route	$ 300	
11	TAMPA	Patrick to Folsom	Lane	$ 9,900	
12	UNDERWOOD	Eldridge to Gomer	Route	$ 400	
		Total		$ 44,000	

TABLE 11

PHASE 4 - PROPOSED BIKEWAYS					
	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
1	BERRY	Eden Greenway to Whitman	Route	$ 600	
2	DIXON	Tennyson to Industrial	Lane	$ 7,700	
3	GARIN	Mission to City Limit	Route	$ 2,800	
4	GRAND	A to Meek	Route	$ 2,100	
5	HATHAWAY	A to North City Limit	Route	$ 1,800	
6	INDUSTRIAL	Dixon to Mission	Path	$	The cost for the bike path should be included in the proposed development of the Fry property (former Hayward Golf Course) at no cost for the City.
7	MEEK	Grand to Jackson	Route	$ 700	
8	MISSION	Industrial to Fairway	Path	$	The cost for the bike path should be included in the proposed development of the Fry property (former Hayward Golf Course) at no cost for the City.
9	SILVA	Jackson to Sycamore	Route	$ 900	
10	SYCAMORE	Silva to Whitman	Route	$ 300	
11	WESTERN	A to North City Limit along Rail Road Tracks	Route	$ 1,500	
12	WHITMAN	Tennyson to Sycamore	Route	$ 9,500	
		Total		$ 27,900	

TABLE 12

PHASE 5 - PROPOSED BIKEWAYS					
	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
1	A	Montgomery to Mission	Lane	$ 1,900	
2	A	Mission to Fourth	Route	$ 2,300	
3	CAMPUS DR	Second to Carlos Bee	Route	$ 3,000	
4	CARLOS BEE	Mission to Hayward	Route	$ 2,500	
5	D	Second to East City Limit	Route	$ 2,400	
6	FAIRVIEW	Hayward to North City Limit	Route	$ 2,200	
7	FIFTH	D to E	Route	$ 800	
8	FOURTH	A to D	Route	$ 1,000	
9	HAYWARD	Parkside to Fairview	Route	$ 9,700	
10	ORCHARD	Soto to Mission	Route	$ 2,100	
11	SECOND	City Center to City Limit	Route	$ 7,200	
12	SIXTH	B to D	Route	$ 900	
13	SOTO	Winton to Orchard	Lane	$ 5,600	
14	SOTO	Orchard to Harder	Lane	$ 6,000	To make it feasible, street improvements are needed.
		Total		$ 47,600	

TABLE 13

PHASE 6 - PROPOSED BIKEWAYS					
	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
1	CORSAIR	W. Winton to End	Bike Lane	$ 10,300	
2	HESPERIAN	La Playa to Skywest	Route	$ 3,900	
3	LA PLAYA	Calaroga to Hesperian	Route	$ 600	
4	TURNER	Calaroga to Hesperian	Bike Lane	$ 3,600	
5	SKYWEST	Golf Course to Hesperian	Lane	$ 8,900	
		Total		$ 27,300	

TABLE 14

PHASE 7 - PROPOSED BIKEWAYS					
	STREET NAME	LIMITS	BIKEWAY TYPE	COST	REMARKS
1	SAN LORENZO CREEK	Civic Center Drive to North City Limit	Bike Path	$ 92,100	There is a pipe obstacle under the Hazel Bridge which may require a dip in the path or a return to street level. The cost of those improvements are not included in the estimates.
2	CITY CENTER	Second to Maple-McKeever	Route	$ 600	
		Total		$ 92,700	

6.3 Responsibilities:

The implementation of this Bicycle Master Plan will require assignment of administrative responsibility. Responsibility for promoting and implementing must be shared by the different departments and major divisions in the City, as follows:

Engineering and Transportation Division:

- The general coordination of the actions to implement the Bicycle Master Plan.
- The schedule of street improvements and construction/installation of the recommended bicycle facilities.
- Inclusion of funding for development of bicycle facilities into the Capital Improvement Program (CIP).
- Land acquisition for bicycle facilities.
- Development of standard drawings for design, construction, operation, and maintenance of existing and future bicycle facilities.

- Preparation of applications to request State and Federal funding.

Community and Economic Development:

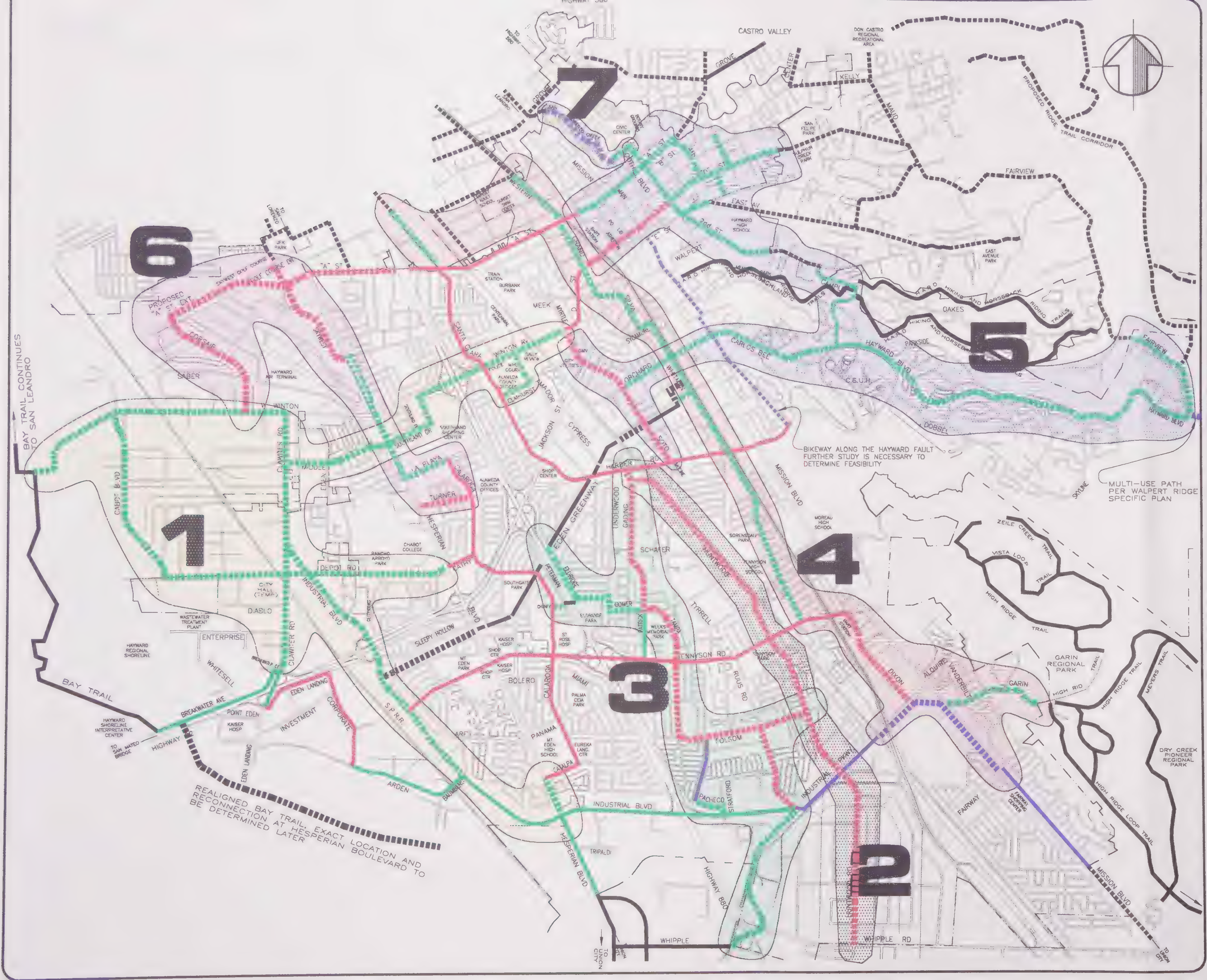
- Incorporation of the Bicycle Master Plan into other planning documents.
- Provision of bicycle facilities where appropriate as part of the approval of development projects.

Police Department:

- Traffic law enforcement to provide safety for the bicyclists.
- Continue conducting bicycle safety education

Public Information Office:

- In coordination with the Engineering and Transportation Division to develop and distribute pamphlets to encourage bicycling.



CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND TRANSPORTATION DIVISION

BICYCLE MASTER PLAN

BICYCLE NETWORK IMPLEMENTATION PLAN

	EXISTING	PROPOSED
BIKE PATH (CLASS I)	━	┅
BIKE LANE (CLASS II)	━	┅
BIKE ROUTE (CLASS III)	━	┅
BIKEWAY BY OTHERS	━	┅

PHASES

1	$43,200
2	$38,500
3	$44,000
4	$27,900
5	$47,300
6	$27,300
7	$92,700

$320,900

FIGURE 20

APPENDIX

A

GLOSSARY OF TERMS

The following terms are used throughout this bicycle master plan.

AASHTO - American Association of State Highway and Transportation Officials.

ABAG - Association of Bay Area Governments. Voluntary regional body which initially attempted land use planning, still develops population, jobs and housing projections, and reviews applications for Federal funds.

ADA - The American with Disabilities Act; civil rights legislation passed in 1990.

ADT - Average Daily Traffic. The measurement of the average number of motor vehicles passing a certain point each day on a highway, road, street or path.

ARTERIAL (ROAD) - A road designated to carry traffic, mostly uninterrupted, through an urban area, or to different neighborhoods within an urban area.

BAAQMD - Bay Area Air Quality Management District. Established by the State to develop and enforce regulations on stationary sources of air pollution. Develops plans to reach air quality standards.

BICYCLE - A device upon which a person may ride, which is propelled by human power through a system of belts, chains, or gears and which has one or more wheels at least 20 inches in diameter or a frame size of at least 14 inches. (City of Hayward, Traffic Code as added by Ordinance 93-21, adopted in 1993).

A bicycle is a device upon which any person may ride, propelled exclusively by human power through a belt, chain, or gears, and having one or more wheels (State of California Vehicle Code).

BICYCLE FACILITIES - A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including bicycle paths, bike lanes, parking facilities, maps of bikeways, and shared roadways.

BIKE LANE (Class II) - A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use by bicyclists.

BIKE PATH (Class I) - A bikeway physically separated from motorized vehicular traffic and either within the highway right-of-way or within an independent right-of way.

BIKE ROUTE (Class III) - A system of roads and ways that are linked by signs to aid bicyclists.

BIKEWAY - Any road, path, or way which in some manner is specifically designated as open to bicycle travel, regardless of whether such facility is designated for the exclusive use of bicycles or is to be shared with other transportation modes.

Caltrans - California Department of Transportation. Established by the State to plan and develop

highways. Now also to assist rural transit and intercity rail. Reports to State Secretary of the Business, Housing and Transportation Agency and gets approvals from California Transportation Commission.

COLLECTOR (ROAD) - A road designated to carry traffic between local streets and arterials, or from local street to local street.

FRONTAGE ROAD - A road designed and designated to serve local traffic parallel and adjacent to a freeway, highway or arterial street.

GRADE - A measure of the steepness of a roadway, bikeway or walkway, expressed as a ratio of vertical rise per horizontal distance, usually in percent. For example, a 5 percent grade equals a 5 ft rise over a 100 ft horizontal distance, or a 5 meter of rise over a 100 meter horizontal distance.

HIGHWAY - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

ISTEA - The Intermodal Surface Transportation Efficiency Act enacted in 1991. Federal legislation guiding the expenditure of federal highway funds.

MTC - Metropolitan Transportation Commission. Established by the State for regional, multimodal long-range transportation planning. Determines which proposed transportation improvements to include in the Regional Transportation Improvement Plan.

MUTCD - The "Manual on Uniform Traffic Control Devices," approved by the Federal Highway Administration as a national standard for placement and selection of all traffic control devices on or adjacent to all highways open to public travel.

PAVEMENT MARKINGS - Painted or applied lines or legends placed on a roadway surface for regulating, guiding or warning traffic.

RIGHT-OF-WAY - A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

RIGHT OF WAY - The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.

STREET, ROADWAY OR HIGHWAY - A way or place, of whatever nature, publicly maintained and open to the use of the public for purposes of vehicular travel or parking (City of Hayward, Traffic Code).

"Highway" is a way or place of whatever nature, publicly maintained and open to the use of the public for purposes of vehicular travel. Highway includes street. (State of California Vehicle Code).

SHARED ROADWAY - Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designated as a bikeway.

SHOULDER (PAVED) - That portion of a highway which is contiguous to the travel lanes, allowing use for emergencies of motor vehicles, for specialized use of pedestrians and bicyclists, and for lateral support of base and surface courses.

SIDEWALK - That portion of a highway, other than the roadway, set apart by curbs, barriers, markings or other delineation for pedestrian travel (State of California, Vehicle Code).

TRAFFIC CONTROL DEVICES - Signs, signals or other fixtures, whether permanent or temporary, placed on or adjacent to a travelway by authority of a public body, having jurisdiction to regulate, warn or guide traffic.

TRAFFIC VOLUME - The given number of vehicles that pass a given point for a given amount of time (hour, day, year). See ADT.

WIDE CURB LANE - A roadway improvement where the curbside lane is typically widened to 14 feet [4.2 m]